THE AMERICAN WEST

Though late nineteenth-century artist Charles Schreyvogel (1861–1912) was raised on Manhattan's lower East Side and spent most of his adult life in Hoboken, New Jersey, his great passion was painting scenes from the American West—and particularly, the post-Civil-War frontier army. Schreyvogel got his first chance to sketch western figures when Buffalo Bill's Wild West Show performed in New York City, and at the age of thirty-two he was finally able to visit the western territories himself. He was desperately poor during these early years, and it was only after unexpectedly winning a prestigious gold medal at the 1900 National Academy of Design Show that his work began to sell.

When weather permitted, Schreyvogel worked in his "outdoor studio" on the roof of his Hoboken home, using live models along with carefully sculpted clay figures of horses in motion. He was a gentle-mannered man of conservative habits, yet his paintings were flooded with light and filled with violent action. "Breaking Through the Lines," reproduced above and on our cover, is typical of Schreyvogel's highly dramatic style; here a desperate cavalryman, charging toward an unseen enemy, levels his revolver directly at the viewer while the battle swirls around him.

If Capt. Albert Barnitz, a troop commander in Lt. Col. George A. Custer's Seventh Cavalry, had seen this painting, he might have recalled a similar battle, one he had fought in near Fort Wallace, Kansas, in 1867. Through a series of letters and diaries written by Barnitz and his wife Jennie, that battle, along with camp experiences, are described in Robert M. Utley's "Campaigning with Custer" beginning on page 4 of this issue.

OIL ON CANVAS
COLLECTION OF THE THOMAS GILCREASE INSTITUTE OF AMERICAN HISTORY AND ART, TULSA

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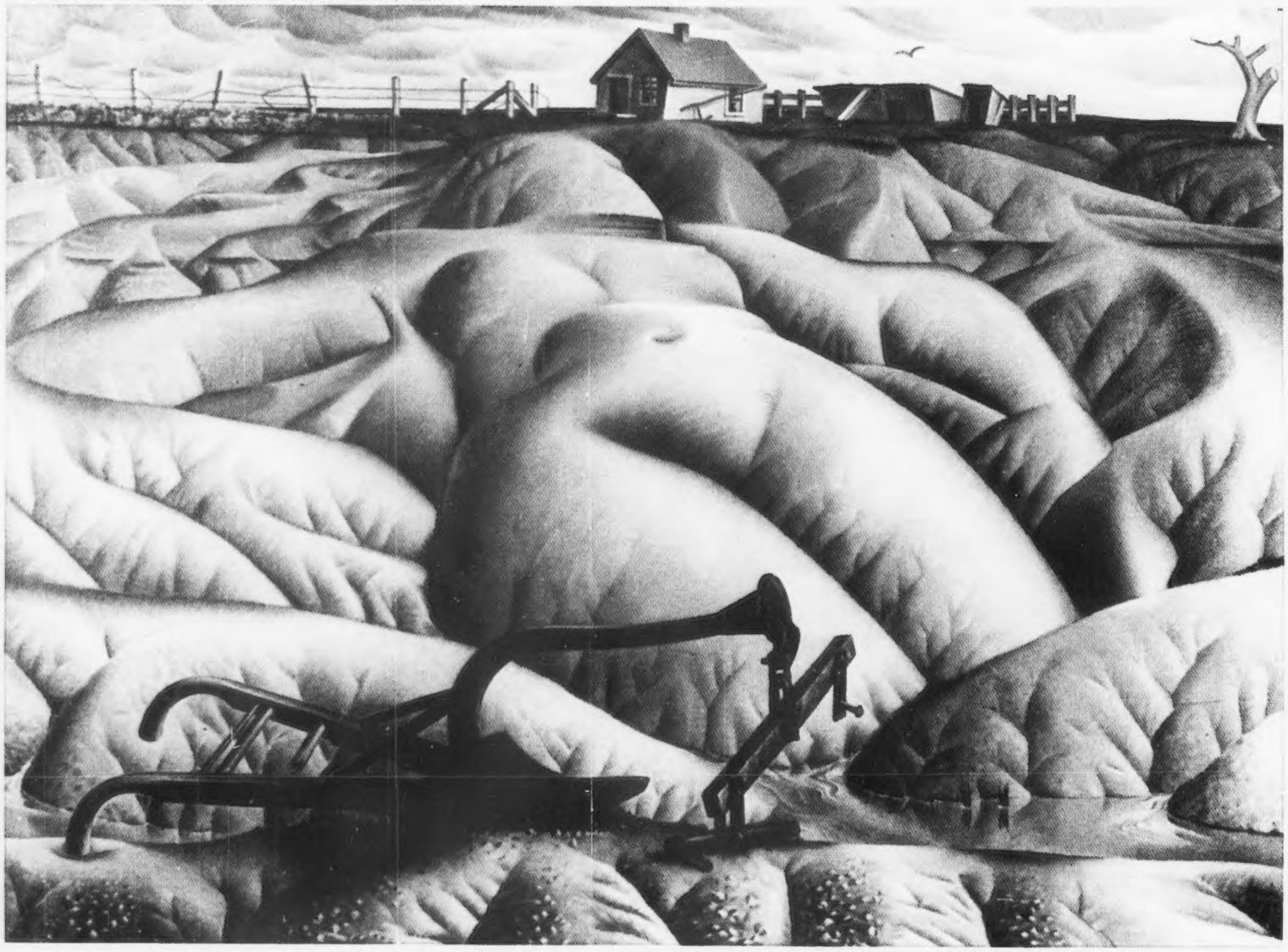

"Mother Earth Laid Bare," a 1936 painting by southwestern artist Alexandre Hogue, vividly and symbolically depicts the ravages of water erosion on the subsoil of a Texas ranch. Water, and particularly the lack of it, is the theme of two articles in this issue of *The American West*. "The Dust Bowl" concerns the devastating effects of drought and wind erosion on the Southern Great Plains during the 1930s, while "Rainmakers" recounts various nineteenth- and early twentieth-century schemes for producing that periodically precious commodity.

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CAMPAIGNING WITH CUSTER

BOTH PAGES: COLLECTION OF THE MARQUESA DE ZAHARA

Army Captain Albert Barnitz poses in field regalia, including a flannel shirt made by his wife Jennie to a pattern borrowed from Elizabeth Custer.

Albert Barnitz and Jennie Platt met at the end of the Civil War. He was thirty-one and a soldier-poet, veteran of several-score combat actions and author of uncounted verses that commanded no more than a modest readership. She was twenty-five, very beautiful and very conscious of it, and much sought after by Cleveland's bachelors. He was beautiful, too, in his blue uniform with brass buttons and gold shoulder straps, his head overflowing with unruly blond curls. She was the product of a stable, close-knit, staunchly religious middle-class family; he of a youth of hard work to aid a widowed mother with three children. She, for all her preoccupation with feminine attractions, was something of a prude; he, with his poet's disdain of convention, boldly made fun of the canons of Victorian society. They shared, however, an affinity for the romantic clichés of that same society and, not altogether consistently, an ambition for intellectual freedom and enrichment.

Albert and Jennie were married and went west with the army to serve on the Indian frontier. Albert, who had won a captain's commission in the regular army, was posted to Kansas as a troop commander in the Seventh Cavalry, commanded by the late boy general of Civil War fame, Lieutenant Colonel George Armstrong Custer. The Barnitz's military interlude lasted only three of their forty-six years of marriage. But because they saw and lived some important history, because they were literate, and because they kept diaries and, when apart, wrote long and uninhibited letters, they left to posterity a body of papers that contains both a contribution to history and a warm human story. The following excerpts from the Barnitz Papers tell of camp life on Big Creek, near Fort Hays, and of a battle—the first noteworthy action of the newly organized Seventh Cavalry—between Albert's troop and a party of Cheyenne warriors.

Letters and diaries sketch life in camp and field during the Indian Wars

Edited, with commentary, by Robert M. Utley

Letters to Jennie, at her parents' home in Cleveland, from Albert in camp near Fort Hays, Kansas:

April 25, 1867:

The present whereabouts of the Indians can not be ascertained. Last evening a poor Irishman came in minus everything but half a pair of trousers, and reported, as soon as he had recovered breath sufficiently to do so, that the Indians were all around his shanty, or ranche—that there were thousands of them—that the whole plains were black with them, and that he had barely escaped with his life down a ravine, and had run all the way to the Fort, never stopping to look back, for fear of being scalped! He had come direct through bogs and swamps, and was covered with mud from head to foot! A reconnoissance was at once made, and not an Indian was to be seen—nor any trace of Indians! If they had really been there, they avoided leaving any indications behind them.

April 27, 1867:

. . . I dare not tell you how many desertions we are having! They are of nightly occurrence! As many as 10 non-commissioned officers and privates have left in one night, with horses and arms! With approval of Genl. Custer I sent out a detail of 1 sergeant and 3 privates the other day, to shoot buffalo, and they all forgot to return! Query, were they all gobbled by the Indians? We think not.

April 30, 1867:

. . . It is still believed that we *are* eventually to go west, and Fort Garling [Garland, Colorado] is spoken of in this

Jennie Platt Barnitz, a Cleveland belle before her marriage to Albert, models her wedding dress and a fashionable false hairpiece known as a frisette.

This article is adapted from material in Life in Custer's Cavalry: Diaries and Letters of Albert and Jennie Barnitz, 1867–68, *edited by Robert M. Utley, being published this fall by Yale University Press.* *Copyright © 1977 by Robert M. Utley.*

connection quite as frequently as Puebla. It is not unlikely that we will go to both places—nor yet unlikely that we shall go to some half a dozen other places in addition! That, in fact, we will be "deployed as skirmishers"—one company or a squadron here, and another there, and every one do whatsoever seemeth right in his own eyes! But *when* we will go, that is the question! . . . I think it will not do to go off and leave the Indians to their innocent pass times. They must be looked after—even if it be from afar. We must keep them from laying up any great supply of buffalo meat this summer, and cause them to feel uneasy in their dreams, even if we can accomplish nothing more. . . .

May 4, 1867:

Well Jennie, we are to remain here until the grass grows —three weeks at least—and what do you think? General Custer is going to send for his wife to come on here!—and he tells me that if I wish you to come out, now is the time to send for you!!!! But I cannot "read my title clear" to do any such thing, as yet, and so I won't do it. . . .

May 6, 1867:

. . . The grass is coming up finely—also the flowers. Discipline is very rigidly enforced. Swearing has been done away with, almost entirely. Both men and officers being prohibited by general orders! That's good. I had previously put a stop to it in my company. We have dress parade every evening, and present a fine appearance. Most of the officers have succeeded in borrowing Sibley tents—and nearly all have in addition wall-tents. I have a Sibley tent, a wall tent, two wall-tent flies, and in addition several spare "A" tents—as the tents have all come up. Capt. [Robert M.] West furnished the officers a repast of ice cream last evening!—a great surprise!—made of condensed milk, I believe, and ice from the Post. I purchased a barrel of apples the other day—green apples—from a man who had hauled them all the way from Missouri (for the use of my company)—and a bushel for myself! Green apples mind, and very fine flavored, at $5 per bushel. The Suttler has got on a new stock of goods.

The Infantry is here, and the Artillery, under Brevt. Lt. Col. [Charles C.] Parsons, has gone back to Fort Riley. Our camp is very clean. It is thoroughly policed every day —not a bit of dirt, or whisp of hay, or particle of manure left any where in camp, all hauled away. General Custer has become "billious" notwithstanding! He appears to be mad about something, and is very much on his dignity! *and* all the officers stand equally on theirs, so he does not make much by the operation! He has evidently incurred the censure of Genl. [W.S.] Hancock [department commander], or some one, in some way, or else Nasby's bitters [a reference to editorialist Petroleum V. Nasby's unflattering remarks about Custer's support of President Andrew Johnson], which are now received here often, do not set well on his stomach!—all of which, however, is confidential! He is really quite "obstreperous." . . .

Extracts from Albert's Journal:

May 13, 1867. . . . A report received that 3000 Indians are in the vicinity of Lookout Station. The whole cavalry command, with the exception of sick and necessary guard, ordered to march at once, to go out and look after said Injuns! We will not see one, of course. The tents are to be left standing. One company of the 37th Inf. to accompany us. We are ordered to take 3 days rations in haversacks of the men, and one feed of forage with us, and be prepared to be separated from our wagons from 3 to 5 days. Weather hot.

May 14, 1867. We marched the whole distance to Lookout Station, 18 miles, without a solitary halt! Thus does General Custer expend his cavalry. There are great inducements, certainly, for officers to take care of their horses. On reaching Lookout, (at 1 o'clock this morning,) I was told to let the men lie down in line, and hold their horses and get what sleep they could, and towards morning to let them build a fire near the creek, in a low place, and make coffee, and be in readiness to march at half an hour before daylight. We marched about daylight toward the cliffs west of Lookout, where we turned south, marched a mile or two, halted our horses, gathered buffalo-chips, and made great smokes, and then started back to the station, whence, after a few minutes halt we continued the march back to the camp near Fort Hayes where we now are—without halting again on our way, except a few minutes—not more than *two* minutes, in my Squadron—at Big Creek Station. The day was extremely hot. . . .

May 17, 1867. Today Genl. Custer required Capt. West, Officer of the Day, to have the heads of six men (of Cos. "E" & "H," 7th Cav.) shaved close to the scalp on one side of a line drawn over the head from the base of the nose to the occipital bone, (while that on the other side of the head was left untouched!) and in this condition the men were then transported through all the streets of the camp, to their own great humiliation, and the exceeding mortification, disgrace, and disgust of all right-minded officers and men in camp. The men were afterward returned to close confinement. Now all this shocking spectacle (no new thing in camp either) was occasioned simply by the fact that these men, impelled by hunger, had gone to the Post, half a mile distant, without a pass, in order to purchase some canned fruit, with which they immediately returned, not having been absent quite three quarters of an hour, and not absent from roll call, or any duty! The scurvey is very bad in camp now, not less than 75 cases being reported, and all for want of a proper diet, and the men are perfectly crazy for canned fruits or fresh vegetables, a fact which makes the infliction of such a punishment for an offense of this nature, if offense it may be called, additionally atrocious. No man but an incarnate fiend could take pleasure in such an abuse of authority, and I have greatly missed my guess if the "Brevet Major General command-

ELIZABETH B. CUSTER COLLECTION CUSTER BATTLEFIELD HISTORICAL AND MUSEUM ASSOCIATION

Lt. Col. George Custer (standing, center) and Mrs. Custer (second from left) entertain in front of their "home tent" on Big Creek near Fort Hays, Kansas, in 1867. When Jennie Barnitz arrived there, she and Albert had a tent nearby.

ing" is not fast losing whatever little influence for good he may have once possessed in the Regiment, and if he does not moreover eventually come to grief, as a consequence of his tyrannical conduct. Charles Clarke, a Bugler, of my company, was ordered by the officer of the day, to perform the office of Barber in the foregoing cases, an additional outrage. Thus does one bad example lead to others.

Albert to Jennie, May 18, 1867:

. . . I don't want you to come, although Mrs. Genl. Custer, and Miss Darrough [Anna Darrah, friend of Elizabeth Custer] are here now,—arrived yesterday, with Genl. [A. J.] Smith [colonel of the Seventh Cavalry]—and although Mrs. Genl. [Alfred] Gibbs [major of the Seventh] and the Band &c will be here in a few days—and it is mainly because I have become so thoroughly disgusted with Genl. Custer, that I will not ask even the *slightest* favor of him, and if you were here, I should be in a measure dependent on him for many little indulgences! As it is, I am perfectly independent. I never approach him except in an official capacity, and then I make my business as brief as possible. Were we to be together for years, I should never associate with him on terms of any intimacy and why? simply because by his recent unfeeling treatment of enlisted men of this command and shameful discourtesy to officers, he has proved himself unworthy of the respect of all right-minded men. I do not particularize, because it would be tiresome, and you (being a little civilian!) would scarcely be any the wizer if I should enter into details! No, Jennie, if you are still at home, abide in patience for a time. . . .

. . . I have not called on Mrs. Custer, or Miss Darrow (how *is* it spelled?) yet,—and I believe only a few of the officers have done so—but I will be officer of the day tomorrow, and then, after guard mounting I must necessarily report, in person, to the General for orders, and may possibly meet the ladies. If so, very well. If not, why then they may consider me unsociable if they like, for I will not visit the General in a thousand years, except officially!—And you would like to know how they are situated? Very pleasantly, I can assure you. The General has removed his tent —or tents rather, for he has I don't know how many now, to a pleasant place on the stream two or three hundred yards in rear of camp, and has had bowers and screens of evergreens erected, and triumphal arches, and I know not

COLLECTION OF THE MARQUESA DE ZAHARA

Albert Barnitz (seated, center) and fellow officers pose at Fort Wallace, Kansas, on June 25, 1867, the day of his rousing battle with Cheyenne warriors. The crude, canvas-roofed shed behind them is the adjutant's office.

what all else. He has a large square Hospital tent, among other things—nearly as large as the little chapel at Fort Riley—and so the ladies will be very comfortable, I have no doubt. If you *should* come, Jennie . . . then I am going to have things nice too! I will have a rival bower of my own!—for I will not mix up with the Darrow outfit at all! I am going to be independent entirely! . . .

Jennie, just as I had finished the foregoing, I heard 30 or 40 shots fired on the picket line, and hastily put on my arms, and ordered a horse saddled, and turned out the troop, under arms, had the roll called, and reported to the Adjutant, and learned cause of the alarm—14 men of H, E, & M Troops had just deserted—gone off armed and mounted!—broke through the guards and departed. So they go! If Genl. Custer remains long in command, I fear that recruiting will have to go on rapidly to keep the regiment replenished! . . .

For a month, in his letters, Albert had conducted a lengthy debate with himself over whether Jennie should join him. Primitive living conditions, uncertainty over the regiment's future operations, and tensions created by Custer's behavior argued against it. At last, perhaps losing patience with his continuing indecision, Jennie made the decision herself. She left Cleveland on May 21 and reached the Big Creek camp a week later. From there, on May 31, she wrote to her mother:

I arrived here all safe, Tuesday noon, precisely a week from the day I started. Another expedition against the Indians will leave here tomorrow, but one company is to remain here at the Post—& as *I* am here Albert's is that company. Aren't we fortunate? We are really delightfully situated. How I wish you could look in upon us. We have a hospital tent, large enough to accommodate a hundred

persons. The only one here but Gen. Custer's. In one corner of it is a stove, in the opposite one is our bed—the bedstead being made of poles nailed together. We have no floor to our tent—but have it carpeted with empty coffee sacks put down with wooden pins. The cedar tree grows here in abundance. We have had those planted all around our tent. We have another wall tent for dining room. Have two very good servants, who cook just what they please, & just as they please. Have some strange dishes & some very nice ones. We have the nicest fruits (canned) & jellies & jams here that I ever tasted—also portable lemonade, put up in a concentrated form—it is delicious. Mrs. Gen. Custer, Mrs. Gen Gibbs, Miss Darraugh, Mrs [David W.] Wallingford & myself are all the ladies here. The officers are very pleasant—it seems as if they could not do enough for me. I wrote you from Fort Riley—giving you an account of my journey there. The Quartermaster, Mr. [Lt. Charles] Brewster of this Reg. was my company here. We came in an ambulance, & I shall never forget the journey I assure you. You see, Gen Hancock has issued an order to this effect—"that no one or company shall cross the plains without an escort of fifteen men"—but as this escort is infantry, & delays were very much, & as Mr Brewster was very anxious to come through quickly, he refused to take the escort . . . & we came, Mr Brewster his servant—driver & myself. He had three revolvers on the seat before him, & those were our only protection. . . . Oh! you can have no idea how I felt coming across those plains—expecting every moment to see any number of Indians. Once we thought we saw some—& Mr B. was terrified enough . . . but we got through all safe & I can hardly tell or describe to you the relief I felt, when this fort came in view. Albert was of course overjoyed to see me & it was so fortunate that I came just as I did for otherwise he would have gone out on this expedition. Now we are to stay. . . .

Jennie's Journal:

June 2, 1867. . . . Have had a delightful day. It has been quiet & Albert has been with me nearly all the time. We have talked & read & slept. It has been intensely warm. It seems so strange at night to listen to the guard outside as he gives the command to halt & give countersign. It seems strange to see two pistols & ammunition in the chair by our bed, & another under our pillow, to have instructions given me what to do in case of an attack, & yet I don't feel in the least afraid.

June 3, 1867. We moved our tent to day, beside Gens. Custer & Gibbs. It is a pleasant spot, & we will have it fitted up nicely. I have spent the afternoon with Mrs. Gibbs.

June 4, 1867. Mrs. Gibbs brought me potatoes for dinner. Mrs. Custer & Gen Smith called this morning. To night the General took tea with us after which I walked with him to his quarters, to hear the band, & two old officers, friends of his. He is a very gallant old gentleman. The officers who are here call often. Albert & I take a nice little walk every evening. I enjoy it so much. Oh! I know we shall not be so happily situated any length of time. What could I do if Albert is ordered away. . . .

June 6, 1867. . . . To night we were invited to Gen Gibbs. The Gen. was drunk, as usual! It is lightning to night & looks like a storm. Oh I am afraid of storms here, but we will hope for the best.

June 7, 1867. Oh! what a night I passed. Such a storm I had hardly conceived of. Gen Smith who has always lived on the plains says he never saw anything equal to it. The lightning was chain & burst like rockets, & some said fairly hissed & fell like stars. The whole air was filled with electricity. The thunder I cannot describe. Much heavier than cannonading, & so very near us. It was terrific. I was calm & perfectly overcome. The rain fell in torrents, the wind blew fearfully, but we did not think of high water. At about 3 O'C a m Gen Smith came to our tent & screamed, "For God's sake Barnitz get up, we are under water." I was obliged to look for my things got dressed soon. With one shoe & one of Alberts boots, & took my watch jewelry & money & went out never expecting to see my things again. The sight was fearful. The creek upon which we were encamped & which had been very shallow the previous day, now was a mighty rushing river, & I think I never saw so strong a current. A few feet back of us, where before had been dry land, was another river madly rushing along, so we were entirely surrounded on a little spot of land, & the water constantly rising. What reason had we to hope. Nearly all felt for a time that there was no escape. The ladies were out half dressed, with hair over their shoulders, & to add to the terror of the scene, drowning men went floating past us shrieking for help, & we could not save them. Oh I can never forget those cries for help, never never. Nine were drowned. Some were saved. The water was rising as rapidly as a man could step back to keep from it. At last daylight came, & were people ever more thankful for light? After awhile the water commenced falling, & we began to hope. During the day the water was so low we could *possibly* have crossed, & how strange we did not, but *drunken* Generals thought it would rain no more & we stayed.

June 8, 1867. . . . About midnight Col [Lt. Thomas B.] Weir came & alarmed us again. It was raining harder than I ever heard it, it seems to me. Almost a water spout & the wind blew even harder than the night before. I dressed myself again & went with Albert to Mrs Gen Custers in that fearful storm. They sent men out who came back and reported that the stream could not be crossed, that we had better risk our lives where we were. Once more we gave up. Mrs Custer says, "Well, we will all go down together. I am glad the Gen doesn't know of it." We went home to our tent. I packed my trunk with all the calmness

Continued on page 58

WILLIAM HENRY JACKSON in MEXICO

LIBRARY OF CONGRESS

by William C. Jones

When William Henry Jackson arrived in Mexico in 1883 to photograph the new Mexican Central Railroad, that country was undergoing widespread changes. Its agricultural economy was yielding to the first stirrings of industrialization. The formation of large-scale haciendas was increasing agricultural production, although at the dreadful penalty of forcing massive numbers of Indian farmers to become peons, working as tenants on land that had once been theirs.

The primary force behind this economic upheaval was President Porfirio Díaz, who had taken over the government by military force in 1876 and would remain in power for the next thirty-five years. His regime was based on order and progress, and despite the grave abuses of personal freedom, Díaz must be credited with bringing an impressive array of improvements to his nation. During his administration foreign trade increased tenfold; banking, the postal system, and educational institutions were greatly expanded; and, of prime importance, the establishment of law and order brought to a close a long era of banditry. Díaz realized that improved transportation was a key factor in developing Mexico's resources and expanding its trade, as well as in binding together the country's farthest regions. This need could only be met by the construction of a railroad system.

WESTERN HISTORY DEPARTMENT, DENVER PUBLIC LIBRARY

The vast sums of capital required to undertake such a project led Díaz to offer liberal concessions and generous subsidies to foreign capitalists. Soon the spike-mauls were swinging all across Mexico, and shining rails were penetrating remote regions. Among the numerous railroad projects, none was so ambitious as the construction of the Mexican Central (*Central Mexicano*) Railroad, a line that would eventually span 1,223 miles. Beginning from a border connection with the Santa Fe Railroad at El Paso, it extended south from Ciudad Juárez across the desolate countryside to Chihuahua, center of a booming mining region rich in lead, zinc, and silver; then over the high Central Mexican Plateau to Torreón, Aguascalientes, Querétaro, and Mexico City. Two important branch lines provided east-west connections to Guadalajara in the western part of the country and the port of Tampico on the Gulf of Mexico.

To advertise the line to foreign tourists and to lure foreign freight traffic, the Mexican Central decided to engage a photographer to produce views of the railroad, the territory it served, and its fine new equipment. Their choice of William Henry Jackson was a natural one, as well as fortunate for historians, for his breathtaking views of railroads threading the high passes of the Colorado Rockies had already gained him considerable fame as a railroad and scenic photographer. Jackson photographed the Mexican Central in 1883, returning to finish his work as the railroad was completed in 1884. The result was a collection of several hundred photographs which both aptly promoted the line and captured for future generations the mood of Mexico in the late nineteenth century.

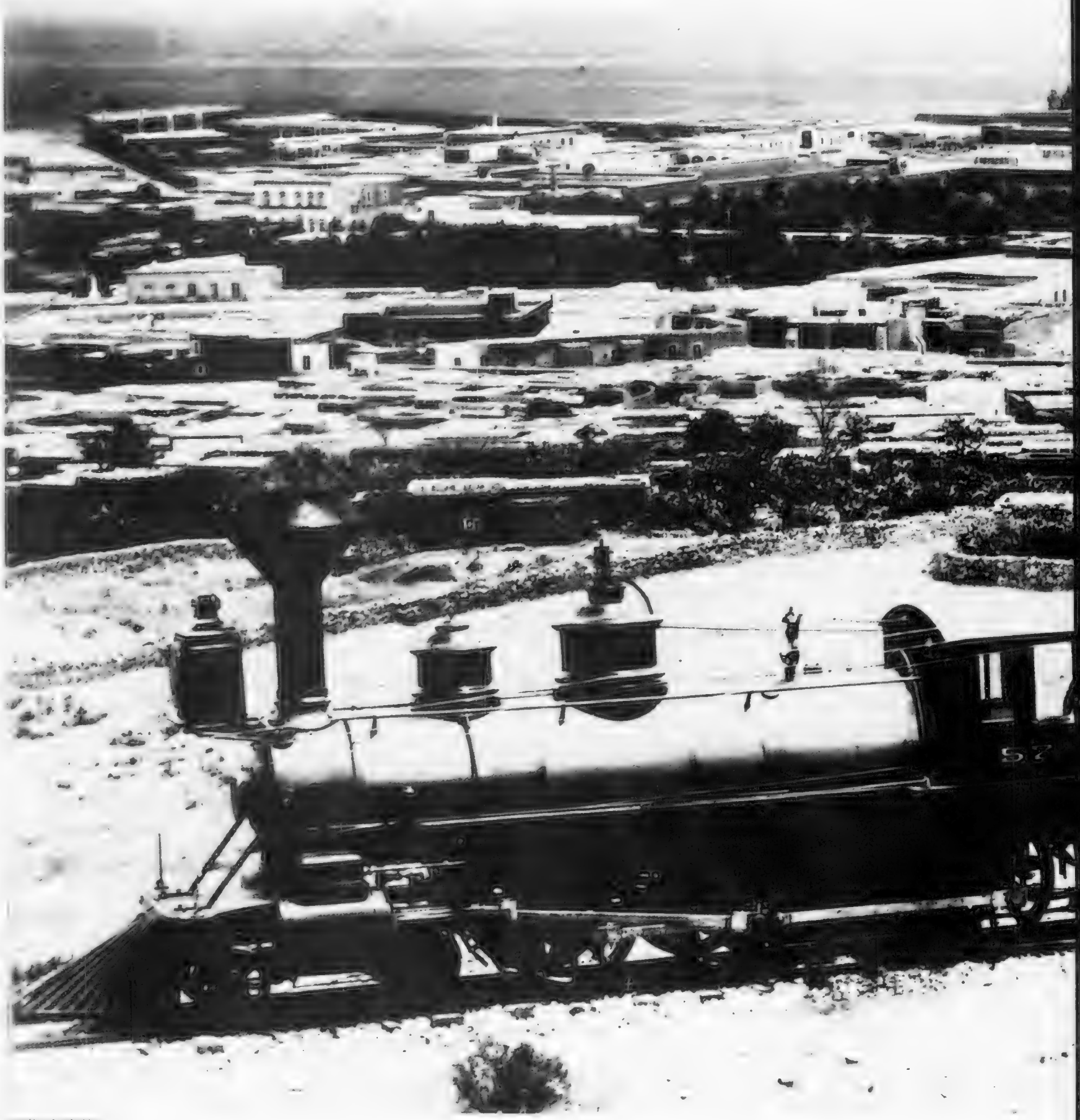
The name William Henry Jackson has a place in any consideration of pioneer American photography. Jackson, one of whose first assignments was to photograph the just-completed Union Pacific transcontinental line across Wyoming and Utah in 1869, continued his career well into the twentieth century. With a long-established reputation as a photographer, Jackson, when in his nineties, produced a series of western paintings based on his early travels and earned considerable fame as an artist. He remained active until his death in 1942, only months before his hundredth birthday.

Jackson was best known for his work in the American West, and his credit line of "firsts" includes photographing Coulter's Hell, which became Yellowstone Park; the legendary Mount of the Holy Cross in the Colorado Rockies; and the Mesa Verde cliff dwellings.

Jackson's views of Mexico portray the sharp contrasts of a changing land. Shining new locomotives pass straining *cargadores* with backs bent to their loads, and fine cities contrast with remote villages hardly changed in centuries. As in all his work, Jackson enthusiastically approached the subject before his camera, seeking to capture the full impact of the land, its people, and its traditions.

William C. Jones *is a library-media specialist in the Adams County, Colorado, schools. He is coauthor, with Elizabeth B. Jones, of* William Henry Jackson's Colorado *(1975)*

The New Railroad seems an intruder in this otherwise serene view of the ancient city of Querétaro, located in a rich valley on the Central Mexican Plateau. Yet Jackson's photograph foreshadows Querétaro's modern destiny as an important railroad way point and industrial center.



CENTRAL MEXICANO
CENT

The Inequities of the hacienda system, under which the vast majority of rural Mexicans became landless peons, are suggested in the Jackson photo below. Here the architectural elegance of Hacienda Peotillos and the dominant centerstage position of its administrators stand in brilliant contrast to the dark figures of the waiting peons.

[illegible] PAGES, LIBRARY OF CONGRESS

Jackson's Camera revealed that for most Mexicans of the 1880s, life was a harsh struggle with few material rewards. Above, workers bring sugarcane to the mill at Cuautla, near Cuernavaca; below, a woman washes clothes in the streets of Amecameca, south of Mexico City.

TH PAGES. LIBRARY OF CONGRESS

Builders of the Mexican Central encountered an amazing variety of geographical conditions in constructing the new railroad. To enable Jackson to photograph in the rugged terrain of Temasopa Cañón (at left), which had required multiple tunnels and massive stone palisades, he was provided with a special train. In the view below, palm trees crowd the tracks along the route to semitropical Tampico on the Gulf of Mexico.

Already Famed for his scenic photographs of the American West, Jackson did not neglect Mexico's natural wonders. At Tlamacas he made this exceptional view of the volcano Popocatépetl (the Aztec "smoking mountain"), rising 17,887 feet above sea level southeast of Mexico City.

LIBRARY OF CONGRESS

In a Striking Juxtaposition of the old and the new, Jackson photographed one of the Mexican Central's new trains beneath the towering arches of the magnificent colonial aqueduct at Querétaro. Built by Spanish engineers between 1726 and 1738 to bring water to the city from the surrounding hills, the aqueduct is still in use today.

BOTH PAGES LIBRARY OF CONGRESS

Two Layers of civilization, Aztec and Spanish, are pictured in Jackson's ironic and hauntingly beautiful study of the great Indian pyramid at Cholula and its superimposed Spanish churches. Once an important holy center, Cholula was conquered by Cortés after a bloody massacre; by Jackson's time both empires had crumbled and only their relics remained.

DUST BOWL

Drought, erosion, and despair on the Southern Great Plains

by R. Douglas Hurt

SUNDAY, April 14, 1935, dawned warm and dry on the Southern Great Plains. In Guymon, Oklahoma, worshipers thronged to the Methodist Episcopal Church to seek divine deliverance from the drought then entering its fifth year. At this "rain service" the congregation heard Rev. R. L. Wells proclaim that there would be little harvest unless rain came soon. "Good rains within three weeks meant a harvest. God rules all and our last resort is prayer." After church services in Amarillo, Texas, Sunday morning motorists flocked to the roads to enjoy an afternoon outing in the spring air.

Unknown to them, a high-pressure system had moved out of the Dakotas and into eastern Wyoming, silently lifting the powder-dry soil of the Plains as it went. By early afternoon it had created the most awesome "black blizzard" the people of the Dust Bowl would experience in the 1930s. As the dust cloud swept southward across eastern Colorado and western Kansas, it extended in a continuous line from west to east. From the height of a thousand feet the cloud boiled downward like the smoke of a gigantic oil fire, only to be met at the bottom by the rising columns of dust that it pushed before it. Inky black at its base, the cloud's color faded to a dark brown at the top as more sunlight permeated the dust. Some who saw it likened it to a great wall of muddy water. Hundreds of geese, ducks, and smaller birds flew in panic before it.

The dust storm struck Dodge City, Kansas, with sixty-mile-an-hour winds at 2:40 P.M.; the instantaneous and total darkness lasted for forty minutes. Semi-darkness followed for the next three hours, and by midnight most of the dust had passed. The storm traveled the 105 miles between Boise City, Oklahoma, and Amarillo in one hour and fifteen minutes, stranding the Sunday afternoon motorists on the highways. During the height of the storm a Meade County, Kansas, woman dragged her rocking chair into the middle of the living room and sat down filled with a satisfying peace because the tape over the window frames was holding out almost every bit of dust. That was, she thought, "a condition under which almost any housewife could have died happily." Occasionally, she turned off the lights to see whether the windows were admitting any light, but all she could see was a dark mass of soil pressed tightly against the

panes. The dust hung like a curtain with no visible motion. Most people who experienced the storm found it terrifying. For one, "It seemed as if it were the end of all life"; another likened the darkness to "the end of the world"; and still another professed, "The nightmare is becoming life."

By the spring of 1935 the people of the Southern Great Plains were entering their fourth year of dust storms, and even though the "blow months" of February, March, and April were the worst they had ever experienced, dust storms in themselves were not new to these people. Indeed, ever since anyone could remember, the dust had always blown there. In October 1830, Isaac McCoy, a Baptist missionary commissioned to survey the land which had been assigned to the Delaware tribe, ventured into eastern Kansas and encountered a dust storm that made it impossible for him to follow the trail of the surveying party which had preceded him by a few hours. In May 1854, a new settler on the eastern fringe of the Great Plains reported that friends warned of high winds and dust in the early spring. The drought of 1860 brought dust storms that reduced visibility to several yards, and twenty years later in April 1880, a Kansas housewife swept over eleven pounds of dust from her kitchen and hall after a storm and estimated that at least 190 pounds of dirt had blown into her house. In mid-September 1893, a severe sand storm struck the Cherokee outlet in what is now northeastern Oklahoma. A rapid succession of sand storms followed during the next two weeks with visibility often less than twenty feet. Such storms plagued the area for the remainder of the decade, and the wind sometimes removed soil to the depth of the plow. In 1899 it drifted soil as much as eighteen inches deep there.

Shortly before World War I, Great Plains farmers increased their use of tractors, gang plows, and headers to expand their wheat acreage. With the outbreak of war in Europe, wheat prices soared to two dollars per bushel, and when the United States entered the conflict in 1917, Great Plains farmers responded to the "Wheat will win the war" campaign by planting still more. After the war, wheat expansion continued, and grazing land appraised at ten dollars an acre increased ten times in value when it was planted in wheat. The proceeds of a good crop year might equal the profits received from a decade of stock raising. When the high wartime prices collapsed in the early 1920s, plainsmen broke more sod (largely with the newly adopted one-way disc plow) in order to plant more wheat to offset the economic loss which low prices caused. New technology, war, and depressed prices stimulated Great Plains farmers to break 32 million acres of sod between 1909 and 1929 for new wheat lands. In the Southern Plains, wheat acreage expanded 200 percent between 1925 and 1931; in some counties this expansion varied from 400 to 1000 percent.

At this time Great Plains farmers gave little thought to the protection of the soil. One mistake they made was to burn off the wheat stubble because it was difficult to work into the ground. Consequently, little crop residue was returned to the

BOTH PAGES, CULVER PICTURES

Above: Dust storms had been increasing in severity for four years when this big one hit the Texas Panhandle in 1936. Some storms traveled so swiftly that motorists were stranded in semidarkness on the highways.

Opposite: Heavy black clouds of dust loom ominously over Lamar, Colorado, in this 1934 photograph. Though the Southern Great Plains had known dust storms before, the "black blizzards" of the 1930s were the worst ever to strike the region.

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During the worst storms, dust piled in drifts up to six feet deep, and livestock died from suffocation. In the photograph above, a Cimarron County, Oklahoma, farmer raises a fence that has been half-buried by the dust.

soil to increase its organic content, and the land became less productive. Furthermore, continued cultivation pulverized the soil and made it susceptible to wind erosion.

Annually the Southern Plains usually receives approximately eighteen inches of moisture. But a drought began during the summer of 1931, and precipitation remained far below normal for the next seven years. The Springfield, Colorado, area averaged over three inches below normal from 1931 to 1935; the Meade, Kansas, area was over five inches below normal from 1931 to 1933; the Goodwell, Oklahoma, area was over nine inches below normal from 1932 to 1933; and the Amarillo, Texas, area was seven inches below normal from 1933 to 1935. In this region where crops needed every drop of moisture that fell, a deficiency of even a few inches meant the difference between a bountiful harvest and economic disaster. The drought caused crop failure and encouraged farmers to abandon land unprotected by vegetative cover. As a result, the prevailing winds, averaging ten to twelve miles per hour throughout most of the region, increased evaporation, weathered the soil, and brought dust storms to the Southern Great Plains in January 1932.

The dust storms in the spring of 1932 were largely confined to sandy lands where wheat, corn, and cotton crop failures had left the ground bare. Although dust storms became more common the following spring, plainsmen were still primarily concerned with crop failures, low prices, and the erosion problem in the Great Plains until a November 1933 dust storm swept beyond the Plains and deposited soil as far east as Lake Superior. In the spring of 1934 the entire nation became seriously alarmed about the growing menace of blowing dust when in April dust reduced visibility to less than one mile in Baton Rouge, Louisiana, and in May the wind removed approximately 300 million tons of soil from the Great Plains and deposited it over the eastern half of the nation including Washington, D.C., New York, and ships five hundred miles at sea.

At this time the boundaries of the Dust Bowl encompassed the part of the Southern Plains where the drought and wind erosion hazard were the worst—eastern Colorado and New Mexico, western Kansas, and the panhandles of Texas and Oklahoma. This area extended roughly four hundred miles from north to south and three hundred miles from east to west with the approximate center at Liberal, in the southwestern corner of Kansas. From early June 1934 through February 1935, dusty conditions prevailed during fifteen to forty days in local areas across this region. During March and April 1935, Amarillo and Dodge City had twenty-eight and twenty-six dust-laden days respectively. The month of March was particularly dirty in eastern Colorado, where dust storms occurred frequently from the twelth to the twenty-fifth, causing six deaths and more than one hundred serious illnesses. There the dust, like snow, formed drifts from a few inches to more than six feet deep; livestock in considerable numbers died from suffocation or from ingesting too much dust-covered feed and grass.

DUST CONTINUED TO BLOW in the early spring for the next four years. In Dodge City, the Red Cross demonstrated how to dustproof homes by covering the windows beyond the frames with a translucent glass cloth. Many people sealed windows with tape, wedged rags beneath doorjambs, and covered furniture with sheets; but still the dust sifted in, piled up beneath keyholes, and made housecleaning a nearly impossible task. After the ceilings of two Dodge City homes collapsed from the weight of accumulated dust in the attic, one enterprising man obtained an oversized carpet sweeper and went into the attic-cleaning business. The cleaner blew the dust into gallon pails which were then emptied outside. By late summer, 1935, he had cleaned 227 southwestern Kansas homes, taking an estimated one to two tons of dust from each attic.

During the dust storms, wet sheets were hung in front of living room and bedroom windows in an attempt to filter the air. Plates, cups, and glasses remained overturned on the table until the meal was served from the stove, and the pans were quickly covered to keep out as much dust as possible. Surgeons and dentists fought the problems of sterilization. Railroad engineers sometimes failed to see the stations and had to back up the trains; at other times the dust forced train crews to walk before the locomotive to scoop dust from the tracks and thereby prevent derailment.

Electric lights dimmed to a faint glow along the streets, and drivers were forced to turn their car lights on at midday. The wind-driven dust scoured the paint from automobile bodies and pitted windshields. Motoring was particularly hazardous during a dust storm because of poor visibility and because the static electricity which accompanied the storms caused automobile ignition systems to fail; many cars were stalled until the storms passed. Windmills, pump handles, and wire fences became so highly charged that a good shock was delivered to anyone who touched them during a dust storm.

Becoming lost in a dust storm was a traumatic and sometimes fatal experience. On March 15, 1935, a black blizzard struck Hays, Kansas, catching a seven-year-old boy away from home. The next morning a search party found him covered with dust, smothered. One hundred miles to the west, the same storm stranded a nine-year-old boy; a search party found him the next morning tangled in barbed wire but alive. Farmers overtaken in their fields by a dust storm sometimes found their way home by following a fence wire with their hands or by crawling on their knees along a furrow which led them to the end of the field and the protection of their trucks.

The dust storms became health hazards. Laboratory experiments revealed that the dust contained a high silica content which had a poisoning effect in the body similar to that of lead. It weakened one's resistance to disease and became exceedingly irritating to the mucus membranes of the respiratory system. Although the dust did not contain any disease-carrying organisms, it did contribute to acute respiratory infections and increased the number of deaths from pneumonia. Illnesses characterized by

THE BETTMANN ARCHIVE

During the 1931–38 drought, crops shriveled in the fields in the Dalhart, Texas, area (above); in 1935 desperate local citizens hired a rainmaker to create precipitation, but the only result was another dust storm.

respiratory irritation and choking were commonly referred to as "dust pneumonia." In order to treat the growing number of cases of respiratory illness, the Red Cross opened six emergency hospitals in Colorado, Kansas, and Texas during the spring of 1935 and issued a call from its

Illness followed the dust storms of the 1930s; in 1935 the Red Cross opened six emergency hospitals in Kansas, Colorado, and Texas to treat "dust pneumonia" and called for the distribution of 10,000 dust masks.

"Dust Headquarters" in Liberal, Kansas, for ten thousand dust masks for immediate distribution in the five-state Dust Bowl area.

When the dust storms reached their peak in the spring of 1935, a journalist reported from Great Bend, Kansas, that "Lady Godiva could ride through the streets without even the horse seeing her." Schools and businesses closed during the worst storms, and chickens went to roost in the early afternoon. A group of Dalhart, Texas, citizens, hoping to find a solution to the twin plagues of drought and dust, met at the county courthouse in late April of that year to hear Tex Thornton, an explosives expert, discuss the possibility of detonating dynamite in the air to bring rain. This scheme aroused the crowd's interest when they heard testimony crediting aerial bombing with breaking the 1892 drought near Council Grove, Kansas, and were assured that the rains in France during the war were caused by the nearly continual artillery bombardments. Some of those present also claimed that dynamite blasting in the caliche pits near Dalhart had brought an abundance of rain to the local area in 1934.

Thornton was optimistic that explosives could bring rain if they were detonated on a day with low cloud cover and moderate temperatures. Farmers and ranchers guaranteed Thornton $300 for the purchase of TNT and solidified nitroglycerin jelly, which he proposed to set off at twenty-minute intervals. The explosives equipped with time fuses would be sent to the cloud ceiling in balloons with connecting strings to control their height. Thornton scheduled the blasting for May first near Rita Blanche Lake, four miles southwest of Dalhart. City businessmen scheduled a street dance for that evening to celebrate the results—in the rain if possible. At the appointed hour, a crowd of several thousand farmers, ranchers, photographers, newsreel cameramen, and reporters gathered to watch the aerial bombing, but a sudden dust storm drove the onlookers to the protection of their cars. Thornton, though visibly upset, was not to be prevented from completing his rainmaking venture. Since the wind was too strong to send the explosives aloft in the balloons, he buried the sixty charges in the sand and set the fuses. The resulting blasts threw additional dirt into the air, where it mingled with the blowing dust, causing even more discomfort to the audience. No rain fell, and Thornton postponed plans for additional detonations.

Not everyone, though, believed conditions in the Southern Plains could be changed, and thinking that they could not be worse off anywhere else, chose to leave the Dust Bowl. In mid-April 1935, the Federal Emergency Relief Administration reported that 100 "normally selfsustaining" families had left Texas County, Oklahoma in a month's time. In Cimarron County the dust had driven out all but 3 of the 40 families that lived in the six townships south of Boise City, Okla-

homa. One Oklahoma woman loaded her possessions, including the family goat, on top of a truck and with her three children headed for an uncertain future in Colorado.

Although John Steinbeck's Joad family will epitomize for all time the plight of those who were "dusted out" of the Southern Plains, the vast majority of the people remained in the Dust Bowl. What made them stay? Many remained because they had an overwhelming faith in the future. Three words—"if it rains"—dictated much of their daily life. If it rained, the wheat and pastures would grow. If it rained, the dust would settle. If it rained, the region would prosper again. Stubbornness made others stay. In 1925 one farmer living northwest of Guymon, Oklahoma, had $35,000 in the bank after farming for thirty years; ten years later and nearly without funds, he said, "I could have left here wealthy, and I'll be damned if I'm going to walk out of here broke now." John L. McCarty, editor of the Dalhart *Texan*, reflected this obstinate spirit when he urged the Dust Bowl's inhabitants to "grab a root and growl." In Dalhart he organized the Last Man's Club—admission obtainable to each man pledging that he would be the last one to leave the Dust Bowl.

One farmer near Boise City, Oklahoma, had a different reason for staying: he noted, "If I leave, I can't get wheat and corn payments on relief and that's all that keeps me alive." Certainly, government aid in the form of subsidies, loans, and grants allowed many farmers to remain in the Dust Bowl. The support of a host of agencies such as the Federal Emergency Relief Administration, Resettlement Administration, Agricultural Adjustment Administration, and the Farm Credit Administration enabled farmers to buy tractor fuel, horse feed, seed, food, and clothing and thus endure the menaces of drought, dust, and hard times until the rains returned.

Some people no doubt remained because they were simply afraid to leave or had no place to go. Others stayed because they had raised their families in the Southern Plains, and their homes held too much sentimental value to leave behind. Furthermore, the storms, for the most part, came in the spring; the remainder of the year was remarkably free from dust—blue skies and occasional periods of light rain prevailed. A western Kansas school teacher reflected her fascination with life in the Dust Bowl when she wrote, "Your education is not complete until you have lived with these people for awhile. Only then will you know what an optimist is. Yet, I am charmed with this country, which is today beautiful with its quiet, widespreading vistas, and tomorrow may bring anything in the catalog of possibilities." For her the Dust Bowl was a "glorious country" which at its best and worst moments had no equal.

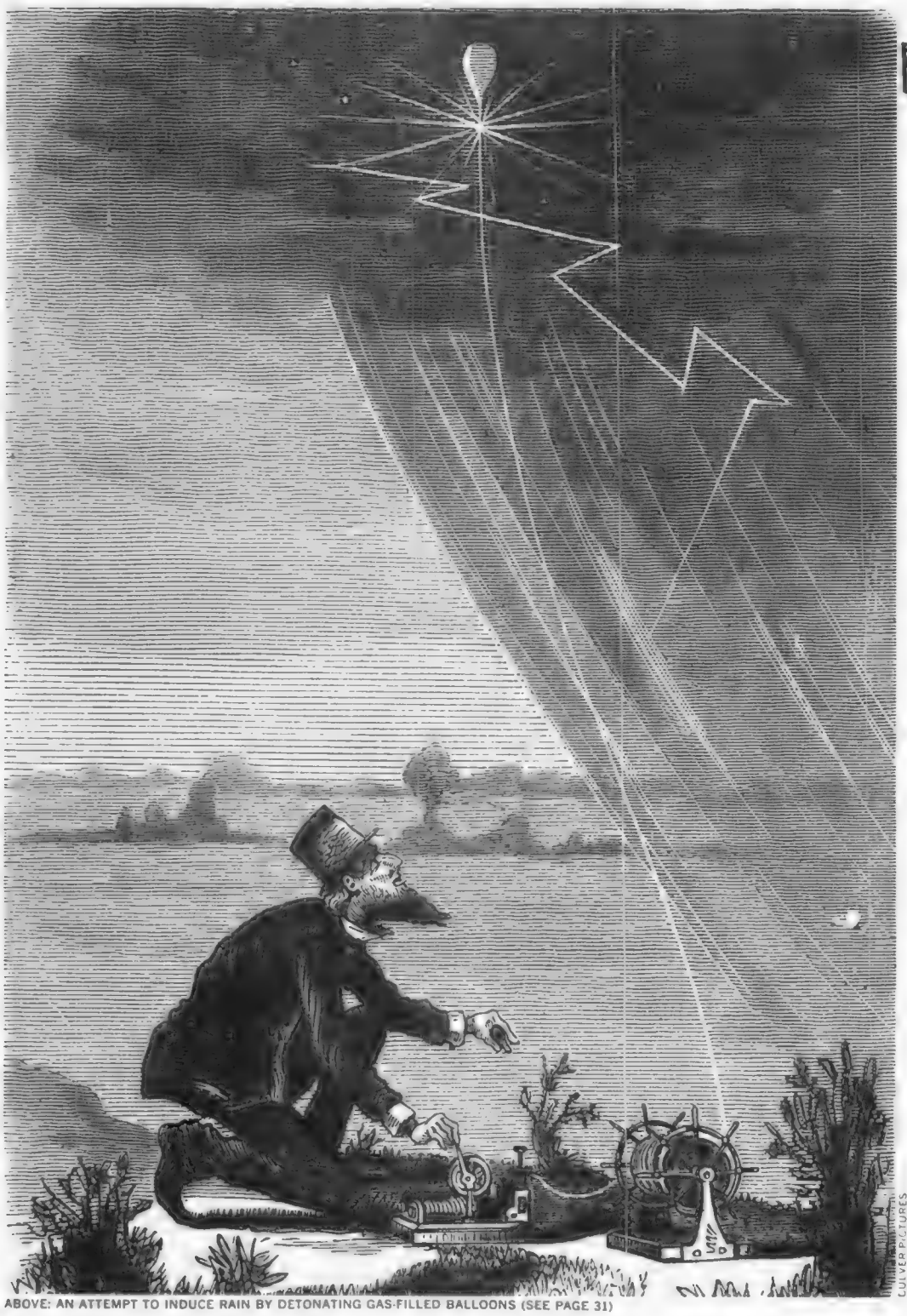
CULVER PICTURES

The drought forced many desperate families to leave the Dust Bowl. The Abilene, Texas, family in this 1936 Dorothea Lange photograph are following the crops west to California as migrant workers.

THE PEOPLE OF THE DUST BOWL suffered not because Southern Plains farmers grew too much wheat but rather because the drought prevented them from growing much wheat at all from 1932 to 1940. During years of normal rainfall wheat offered excellent soil protection against wind erosion. The drought, how-

Continued on page 56

RAINMAKERS



ABOVE: AN ATTEMPT TO INDUCE RAIN BY DETONATING GAS-FILLED BALLOONS (SEE PAGE 31)

by jeanne schinto

A SEARCH FOR PHOTOGRAPHS of old-time traveling sales agents who roamed the Plains around the turn of the century unearthed a curious series of images of a different type of frontier wayfarer. Instead of sending sales drummers, a Nebraska State Historical Society archivist mailed off some pictures of a tall, thin, white-haired man named Charles Wright, a rainmaker by trade, and his horn-shaped rainmaking machines.

At first glance the series seemed misplaced among the photos of slick, moustachioed young gents paused in mid-sales pitch at a merchant's counter. After some reflection and research, however, it seemed clear that rainmakers like Mr. Wright could rightly be called traveling salesmen. They sold a commodity that, in those days, a pioneer would have been just as likely to buy as the sewing machines and typewriters the drummers proffered.

In the photographs, probably snapped circa 1900 somewhere in the Corn Belt, rainmaker Wright looks hot, tired, wrinkled, a little timid in front of the camera. His contraptions appear rickety, haphazard, hardly scientific to the modern eye. Dwarfed corn plants wilt in the background. The sky is cloudless, hazy bright —there isn't a whisper of rain.

Today Mr. Wright seems foolish, as do the men waiting in the parched cornfield with him. The photos conjure up images of "Bonanza" reruns and popular songs that sentimentalize the lives of those sad and mysterious characters who sold false hopes to themselves as well as to unwitting farmers.

And yet rainmakers like Mr. Wright represent only a small part of the rainmaking frenzy which occupied some of the best minds and most earnest hearts of that era. Moreover, in retrospect, the traveling rainmakers' claims, often cited

"Rain follows the plow, the seedling, the battle cry, the puff of gaseous fumes"

for fraud back then, were neither the most incredible nor the least scientific up for sale.

The need for rain and the fear and dangers of drought have always drawn the world's agricultural societies toward thoughts of controlling the elements. In ancient times, rain-gods and thunder-gods figured much more prominently than sun-gods in many mythologies and were propitiated in every imaginable way. In China, bare-chested suppliants paraded with dragons and beat gongs to bring rain, presumably in attempts to imitate the noise and fury of thunder and thereby dare the gods to do one turn better. In South America, Indians set fire to the plains to try to coax the moisture down, while North American medicine men sat cross-legged in their lodges burning strong-smelling herbal concoctions during periods of extended drought.

The ways to control the weather devised by American settlers were less spiritual. It took a peculiarly American sort of myopia to make popular the more pragmatic notions and methods of rainmaking which rolled like storm clouds across a dry western frontier from the mid-nineteenth century to the beginning of World War I. Only an American pioneer's special combination of practicality, romanticism, and rugged individualism could have nurtured the theories which were popular then. Only the same mind which had doggedly followed the doctrine of Manifest Destiny, dangling before him like a carrot on a stick, across strange and wild terrain, could have paid so dearly to learn that rain was one of the few commodities that no amount of hope, hard work, or money could secure.

HISTORICAL PICTURES SERVICE, INC

INDIAN RAINMAKING IN THE WEST, AS DEPICTED BY FREDERIC REMINGTON

ONE OF THE FIRST THEORIES to capture the imaginations of the pioneers was that increased settlement, cultivation, and tree-planting on the Great American Desert would automatically wring rain from the clouds. Josiah Gregg was one of the first to commit the idea to paper when he included it in his now-classic *Commerce of the Prairies,* published in 1844. It became both a comforting and temptingly believable notion to many settlers: "Why may we not suppose that the general influence of civilization—the extensive cultivation of the earth—might contribute to the multiplication of showers, as it certainly does of fountains?" one advocate asked. "Or that shady groves, as they advance upon the prairies may have some effect upon the seasons? At least, many old settlers maintain that the droughts are becoming less oppressive in the West. The people of New Mexico also assure us that the rains have increased."

Similar wishful thoughts were included in an 1873 prize-winning essay written by a Rev. Mr. C. S. Harrison of York, Nebraska: "Portions of Utah, considered rainless, have been watered by showers since trees have been planted. There is some foundation for the belief that rain follows the white man. Providence seems to encourage the adventure of men as they push westward. The mythical desert will doubtless be covered with beautiful groves and fruitful orchards even to the base of the Rocky Mountains." Rev. Mr. Harrison even went so far as to suggest that the inverse of the theory was true. "In many places," he wrote, "streams and springs have been dried up by the removal of trees."

Even "men of science," in good faith, supported the idea that the climate would permanently change, and in March 1873, the idea was given governmental sanction when Congress passed "an act to encourage the Growth of Timber on Western

Prairies." A land-incentive plan devised to inspire settlers to plant more trees, the Timber Increase Act was taken by those with land to sell or commonwealths to build—the railroad promoters, real-estate agents, town boosters—as sanction to advertise a notion that had not been proven scientifically, that not all of them believed, but which would make many of them rich.

Town booster Charles D. Wilber, for instance, felt confident enough to proclaim with assurance to the Nebraska State Horticultural Society in 1878: "The average rainfall for nine years past at Omaha is 29 inches. With the year ending 1877, it was 38 inches in southeast Nebraska—an amount equal to the average of Northern Illinois. From similar statistics," he concluded, "we are able to show that the rainfall is steadily increasing westward, following the pioneer farmer and his plow, which is the primal cause of these changes."

It seems incredible that so many supposedly level-headed pioneers would bite such a sparsely baited hook—until, that is, a predicament which Professor Walter Kollmorgen of the University of Nebraska called the pioneer's "psychosis" is examined more closely. In 1935 the professor wrote, "The early plainsman's psychosis made it relatively simple to promulgate what in retrospect seems a rather ludicrous idea. He was as replete with self-reliance and faith in the Almighty as he was devoid of worldly means and accurate knowledge of the Plains. Lack of information and a naive disposition

CULVER PICTURES

PLANTING A TREE: "SHADY GROVES AFFECT THE SEASONS"

toward the powers that be, other than political, rendered him very impressionistic. Agents proclaiming the new order which said that a settler's presence and activity on the Plains would effect a change in the cosmic order pleased him more than a little."

But a belief buoyed up by little more than wishful thinking must eventually be abandoned. Before too many Arbor Days had passed, the settlers, particularly during the drought years of 1889 and 1893–94, were cursing those who had popularized the notion that had once lured them west in droves. In 1938, Dr. Frederick E. Clements, affiliated with the Carnegie Institution of Washington, D.C., wrote that when the theory that rain would follow the white man was invalidated, "The exodus from the parched regions sent half a million settlers across the Missouri River and back to their homes in the East."

That theory was not the only idea on rain lurking about on the Plains during the late nineteenth century. The age-old notion that battles cause rainfall occupied the center ring next.

Watching the Greeks and Romans have it out, Plutarch noted in 102 B.C., "Extraordinary rains pretty generally fall after great battles; whether it be that some divine power thus washes and cleanses the polluted earth with showers from above, or that moist and heavy evaporation streaming forth from blood and corruption thicken the air."

During the Civil War, it was thought that the same phenomenon repeatedly occurred; in fact, it became one of the factors a general considered on the eve of an important battle. In 1870, Edward Powers wrote the much heralded *War and Weather* to document the idea as thoroughly as he could—which sufficed for settlers grasping at dry straws. That same year the U.S. Weather Bureau was established in the War Department, further evidence that Americans in power believed that the clap of gunfire and the clap of thunder were somehow connected.

Accordingly the next batch of hopeful rainmakers experimented with a kind of simulated warfare effect, an idea that was edged with the sort of pseudo-scientific glimmer that appealed to the new Americans' progressivist view of man's future. After all, a settler might reason, other unbelievable devices were constantly being invented: the electric lamp, the telephone, the phonograph. If men could produce those miracles through science and ingenuity or through Edison's proverbial inspired perspiration, then why not something which would regulate the rain? If necessity was, in fact, the mother of invention, why wouldn't she soon see fit to help a man produce that priceless and vital device, a rainmaker?

The first explosives-based rainmaking device was patented in 1880 by General Daniel Ruggles of Fredericksburg, Virginia. Ruggles's invention consisted of balloons carrying torpedoes—cartridges charged with nitroglycerin, dynamite, guncotton, gunpowder, and fulminators. The balloons were connected to an electrical apparatus used to explode the cartridges. But since the Timber Increase Act was still being bolstered by congressional

CULVER PICTURES

"RAINFALL IS STEADILY INCREASING WESTWARD, FOLLOWING THE PIONEER FARMER AND HIS PLOW"

CULVER PICTURES

CIVIL WAR COMBAT: "EXTRAORDINARY RAINS . . . FALL AFTER GREAT BATTLES"

attention and amendments, it was not until a decade later that Senator Charles B. Farwell of Illinois could convince his colleagues to finance a venture implementing such a mechanism.

In 1891, General Robert G. Dyrenforth was appropriated $19,000 to conduct experiments based on the Ruggles invention. In a report made later to the Fifty-second Congress, Dyrenforth described his modifications to Ruggles's original idea: "Balloons filled with a mixture of oxygen and hydrogen, and sticks of dynamite carried up by kites were exploded in midair, and explosives were set off at the same time on the ground."

The preliminary tests were conducted near Dyrenforth's home in Washington, D.C.'s Mount Pleasant area; but because of that locale's naturally humid climate, nothing conclusive could be determined except that the explosions frightened the neighbors' livestock.

The first official testing was completed at the ranch of Nelson Morris near Midland, Texas, a town in the northwestern part of the state known for its aridity. When Dyrenforth and his party arrived at the Morris homestead one August day in 1891, the general feared that they had picked too harsh a setting in which to test the system. "There was not a fleck of a cloud visible anywhere in the sky," he recalled later. "The ground was dry with the appearance of alkali and seemed parched. The landscape was a general glare. There was a strong wind from the south which seemed greedily to take up any moisture that might be present as on the skin, leaving the skin with the feeling of parchment."

Needless to say, the results of several weeks of experimenting at Midland were negligible.

Nonetheless, at the urging of the city fathers of El Paso, Dyrenforth moved the experiments there. During September he and his crew fired away. Once a heavy dew was noted on a morning after particularly heavy and prolonged explosions; and dew was an uncommon occurrence in El Paso, some said. Other than that, the El Paso experiments were as unrewarding as those at Midland.

Before giving up, the experimenters moved on to San Diego in October, bolstered by another $10,000 from Congress. One night from 9:45 to 11:30, a member of the government party recalled, "The explosions were conducted at the rate of ten a minute. The hundreds of spectators who had come from San Diego and other towns nearby, crowded together in a frightened mass in the open space in the midst of the camp. As soon as they were assured that passage was safe along the roadway, a large majority of the spectators started for their homes. At midnight after the rapid firing had ceased, those who had remained along left the camp, the believers in 'rainmaking' being sadly disappointed and all being positive that the test was a complete failure, for the sky overhead was never clearer and the moon never shone more brightly."

Although laborious records kept by the Dyrenforth team show that it did rain occasionally while they were experimenting, in the end, science scoffed. George E. Curtis, a meteorologist on the site, commented on one seemingly successful session this way: "The showers which came after the explosions were very much like those preceding and were actually in sight before the firing began. At least no close relationship between the explosions and the showers seems to have been shown by the experiments."

The one tangible outcome of the whole government affair was that a crop of commercial rainmakers sprang up all over the country.

NATIONAL ARCHIVES

THE 1891 GOVERNMENT RAINMAKING EXPEDITION AT MIDLAND, TEXAS: INFLATING A BALLOON

THE TYPICAL RAINMAKER who zigzagged across the Plains and the Far West in the days after the hoopla and publicity of the government experiments seems to have employed methods very much like those of Mr. Wright. Although a few rainmakers persisted in using the blasting technique, most mixed and burned chemicals, directing their fumes toward the clouds in an attempt to produce rain. The theory behind most of their experiments, recalled one eyewitness for *Harper's*, was "that this gas went up and moisture coagulated around the particles and down came the rain. It seemed simple and logical to us; and, for that matter, it seemed logical to countless county and state officials" who financed the rainmakers who rolled into town.

Often the rainmaker was a retired man who called himself "professor" or "doctor" or "colonel." He had likely dabbled in chemicals and "scientific mixtures" in his youthful days, and had seen the sad effects of drought upon the land at that time, too. Some rainmakers would charge a flat rate of $500, no matter where, when, or if the rain fell. Others, working on commission, charged half a cent an acre, or by the number of cultivated acres. Still others would charge by the number of miles between the place where the rain attempt was staged and where the rain actually fell. That sort of arrangement caused skeptics to suggest that all that a would-be rainmaker needed in order to be successful was to contract to bring rain

NEBRASKA STATE HISTORICAL SOCIETY

CORNBELT RAINMAKER CHARLES WRIGHT, CIRCA 1900

NEBRASKA STATE HISTORICAL SOCIETY

THE WRIGHT GASEOUS GENERATION EQUIPMENT IN OPERATION

to as many different parts of the country as possible at any given time.

Harper's eyewitness, Homer Croy, described one typical rainmaker's visit to a Corn-Belt town. "The railroad had converted a whole box car to his use. Windows had been cut in. One end was for sleeping and eating, my peeking revealed, and the other was for the chemicals and gases that were going to save our corn. And in the roof over this end was a hole. The little stooped man climbed the iron ladder to the roof of the car where he studied the sky—we held our breath." Then he sent out word that "the sky was right."

"Next," Croy recalled, "a great stirring inside the mysterious car, and, in a few minutes, a grayish gas began coming out of the stovepipe hole in the roof. In no time the gas hit our noses—the most evil smelling stuff we had ever encountered."

Croy knew from experience that the experiment could last anywhere from two or three hours to several days, so he and his neighbors and other spectators settled in for a long wait. A man came along selling umbrellas which, Croy remarked, only the "city people" bought. Meanwhile children played, men fed their horses out of the back ends of hacks, women shuttled food back and forth from the cornfield, and the gas continued to rise.

In the afternoon a cloud appeared—and that particular night it rained.

One of the most famous of the traveling rainmakers was Frank Melbourne, "the Australian Rain Wizard," imported from "Down Under" by a western railroad company. Described by one observer as a "kind of cornfield Barnum," Melbourne knew how to mingle showmanship with salesmanship and became quite a success. He set up headquarters in Goodland, Kansas, and three rainmaking companies were organized there: the Inter-State Artificial Rain Company, the Swisher Rain Company, and the Artificial Rain Company. Goodland reportedly became the rainmaking capital of the Corn Belt.

Imported rainmakers were the exception, not the rule, however, since they were usually more expensive. In July 1908, Captain John McKittrick summoned to his farm in Bakersfield, California, some three hundred guests to greet one Sudi Witte Pasha, a rainmaker from the Sudan. Pasha brought with him twenty-two servants and "scientific" aides; he charged the captain $150,000 plus expenses for his efforts—but produced no rain.

Generally, Americans of that era put their money on native men like Charles Mallory Hatfield. Hatfield, a traveling sewing-machine agent turned rainmaker, did not actually claim that he could make rain. "I only claim that I can induce Nature to release, by way of precipitation, the moisture which the air already carries," he cautioned a reporter from *Everybody's* in a 1919 interview. "Therefore it may be said that I induce rain, but not that I make it."

At the time of the interview, Hatfield had been "inducing" rain for fifteen years, charging rates from $50 to $10,000, with

contracts that always read, "No rain, no pay." His method, like that of Melbourne and other rainmakers, was in the pseudo-scientific tradition—heavy on the outward signs, light on the specific scientific methodology. "A tank filled with certain unspecified 'chemicals' was exposed at a height of 25 feet above ground. The theory is that the apparatus draws clouds from other parts and causes them to precipitate their moisture," the *Everybody's* reporter explained.

Scientifically sound or not, Hatfield's experiments were inordinately successful; and sometimes they were too successful. In March 1912, Hatfield was offered $4,000 by ranchers and merchants in Hemet, California, to make it rain; and he "induced" the worst flood in local history. Almost twelve inches of precipitation fell during a period of several days.

How large a part chance played in all these rainmaking efforts was always a matter of speculation at the time, although the U.S. Weather Bureau, which had been transferred from the War Department to the Agriculture Department in 1890, was improving its forecasting and record-keeping techniques.

In July 1912, a "successful" dynamite experiment was conducted in Battle Creek, Michigan; but rain had already been predicted, experts testified a few months later. Such coincidental occurrences, along with advances in natural science and technology, fueled the skeptics' fires. If, in fact, rain would ever be "man-made," they contended, it would not be done by these itinerant scientists.

CALIFORNIA ROOM, SAN DIEGO PUBLIC LIBRARY

CALIFORNIA RAINMAKER CHARLES MALLORY HATFIELD AT WORK, CIRCA 1915

In 1946 CLOUD-SEEDING was developed by General Electric's Vincent J. Schaefer and Irving Langmuir in their Schenectady, New York, laboratory. The theory behind the process is that the introduction of agents into a cloud of supercooled droplets promotes the formation of ice crystals which then cause moisture to precipitate. The two agents commonly used are dry ice (solid carbon dioxide) and silver iodide. Dry ice is usually sown from an airplane into clouds; silver iodide is released into clouds as smoke, sometimes from an airplane, sometimes from the ground, provided there are the necessary updrafts.

The wave of optimism that trumpeted cloud-seeding's arrival in the 1940s died down with the news that the new method, like those of the old-fashioned rainmakers, seemed to work only with moisture-laden clouds already at the bursting point. Today scientists are still a long way from producing abundant rain when and where it is needed.

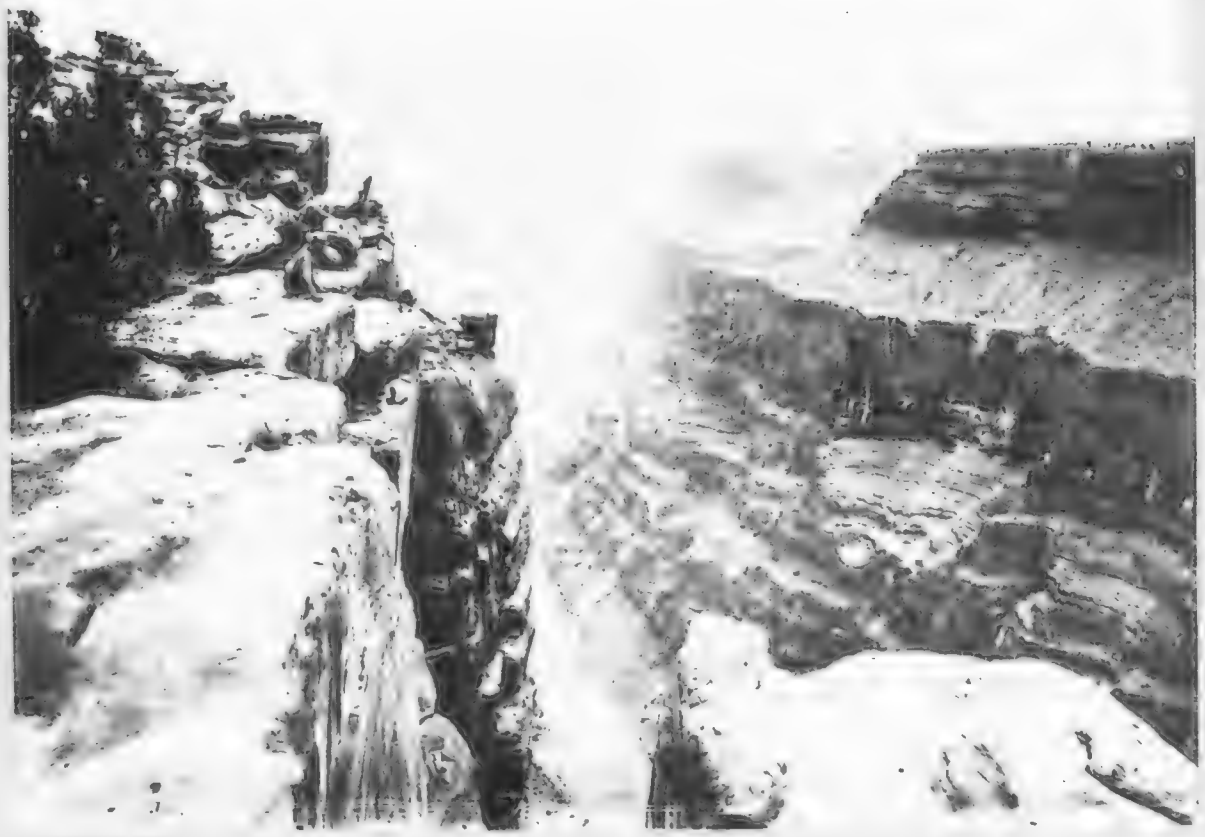
The dollars and energy spent on the ideas and contraptions of Mr. Wright and his ilk were not wasted, however. They gave to the settlers a hope without which they might not have been so daring or so stubborn. Without that hope, they might not have persevered.

Jeanne Schinto *is a free-lance writer living in Washington, D.C., who specializes in historical topics of contemporary interest.*

TITLE INSURANCE AND TRUST COMPANY COLLECTION, SAN DIEGO

SAN DIEGO, CALIFORNIA, ON JANUARY 27, 1916, FOLLOWING A HATFIELD RAIN-INDUCING OPERATION

First Photographers of the GRAND CANYON



U.S. GEOLOGICAL SURVEY

by George and Virginia Simmons

WHO WAS THERE FIRST with a camera? Who first produced a printable negative?

Grand Canyon historians have generally overlooked or misinterpreted these questions and their answers. As a result, each of five early photographers has received either more or less credit than he actually deserved for the remarkable group of pictures taken on the two celebrated surveys that both reached the Grand Canyon in 1871–72.

That confusion exists regarding the individual contributions of the five photographers—Timothy O'Sullivan, E. O. Beaman, James Fennemore, John K. Hillers, and William W. Bell—is not surprising. All worked during the same brief thirteen-month period and were associated with either John Wesley Powell's Geographical and Topographical Survey of the Colorado River or Lieutenant George Montague Wheeler's Geographical Survey of the One-Hundredth Meridian. Despite these intricacies, by examining the chronology of the two expeditions and the activities of the five photographers, one can clarify who made which of the first negatives and in what sequence.

With competition for federal funds undoubtedly goading the two surveys to collect as much useful data as possible, both equipped themselves to obtain photographic records as well as the more usual types of data. Each party had received a Congressional appropriation, but Powell's survey was a civilian project while Wheeler's represented an attempt by the United States Army to reassert its former responsibility for exploration. During Powell's previous, less formal journey through the Grand Canyon in 1869, no attempt had been made to photograph the scenery or the geologic features.

At different times in 1871–72, the Powell and Wheeler surveys included photographers O'Sullivan, Beaman, Fennemore, Hillers, and Bell. In addition to views which these men made for the surveys, Beaman made some pictures independently after he left the Powell expedition. To the roster one might also add the name of Walter Clement Powell, who is more to be pitied than blamed for his unsuccessful struggle to become a photographer.

The first field season of the Wheeler survey in 1871 included an expedition up the Colorado River from Camp Mohave, Arizona, to Diamond Creek within the Grand Canyon. Wheeler staffed this party with care, selecting such men as Grove Karl Gilbert, a promising geologist who was later a head of the United States Geological Survey; and Frederick W. Loring, a dashing young journalist whose connections with the eastern press Wheeler may have expected to be influential in securing subsequent appropriations from Congress. On a par with others in the party was photographer Timothy H. O'Sullivan, already well seasoned in the art of outdoor photography. His previous experience had included an apprenticeship under Mathew B. Brady during the Civil War as well as service with Clarence King's Geological Exploration of the Fortieth Parallel and the Darien expedition on the isthmus of Panama. In addition to these experiences, O'Sullivan possessed youth, industriousness, and thoroughness.

Opposite: This dizzying 1872 view of the Grand Canyon's inner gorge was probably made by Powell Expedition photographer James Fennemore in company with his assistant and successor John K. Hillers. Much of Fennemore's work has been incorrectly attributed to Hillers.

On September 16, 1871, O'Sullivan photographed the departure of the expedition from Camp Mohave and then followed on a craft appropriately named *The Picture*. Nineteen days of rowing, towing, and lining upstream brought O'Sullivan and his fellow travelers to Grand Wash. After a rendezvous with a supply party, they entered the "Big Cañon" on October 7, the date on which O'Sullivan made the first surviving photograph of the Grand Canyon. A striking "illuminated sketch" made after this photograph appeared several years later in the official reports of Wheeler's surveys.

From October 7 to 19 the Wheeler party continued to force its way upstream fifty-two miles through the Grand Canyon to Diamond Creek. As they went, O'Sullivan diligently recorded the journey with his clumsy camera and glass plates. On October 21 he made his last picture of the Grand Canyon, a view of the twenty men who had completed the entire trip as well as the two boats which had survived the adventure. This final photograph was made at the mouth of Diamond Creek.

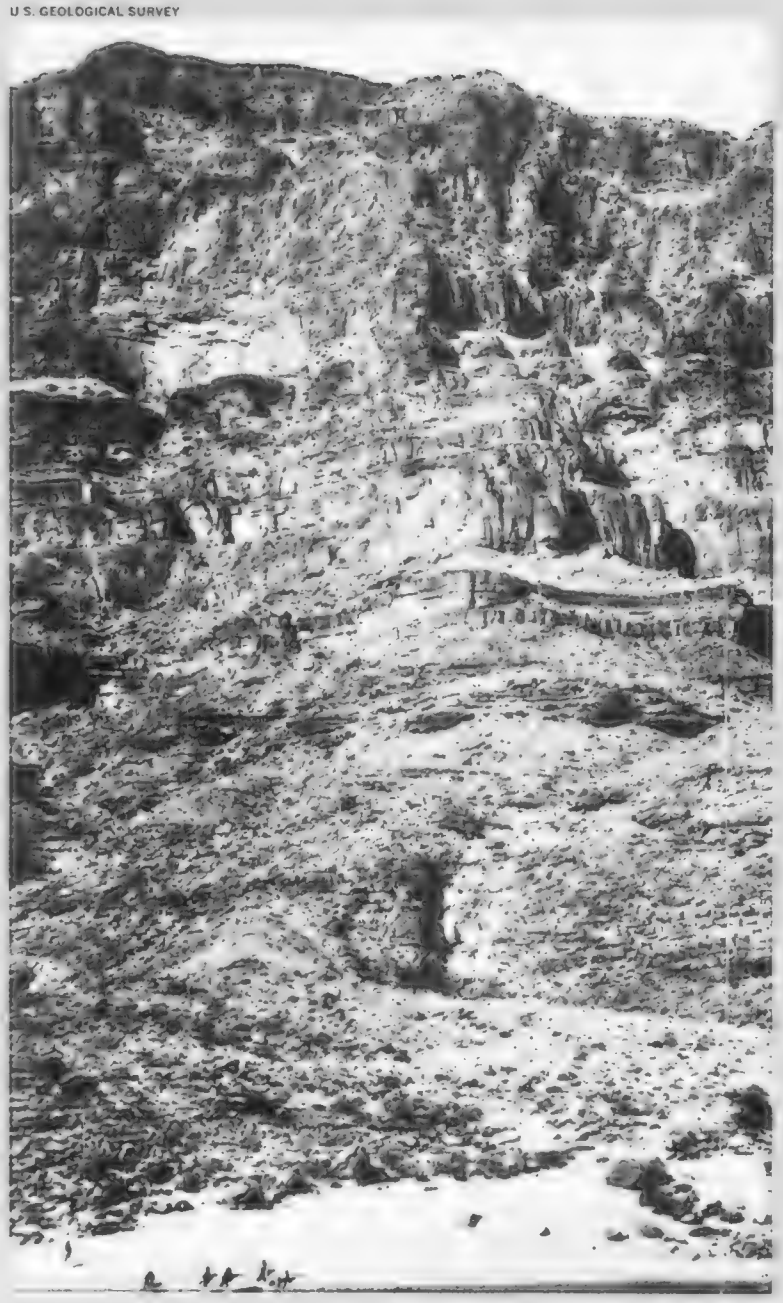
Who can doubt that Powell must have felt some envy because Wheeler's survey, not his own, had obtained the first photographs of the canyon which had made Powell a national hero in 1869? At the time when O'Sullivan was working between Grand Wash and Diamond Creek, however, Powell's men were far upstream in Glen Canyon, although they had begun their survey in May 1871 at Green River, Wyoming.

But the achievements of Wheeler's ambitious expedition had been seriously damaged by a series of catastrophies. First, while Wheeler's own boat was being lined up Disaster Rapids on October 11, the boat had swamped. Not only had badly needed rations and instruments been lost in that episode, but so, too, had "a stout case containing most valuable private and public papers and data for a great share of the season's report, which for the first time in the journey had not been taken out of the boat at a portage," as Wheeler later reported. This loss alone nearly negated the value of the season's work.

The second calamity occurred shortly after the river trip in an event known as the Wickenburg Stage Massacre. A coach carrying Loring as well as the survey's topographer and a third member of the expedition was attacked by Indians, and all three were killed. As a result, the drafting of the river map was handicapped, and Wheeler's primary link with the press was lost.

The third blow was discovered in Washington when

U.S. GEOLOGICAL SURVEY



Wheeler Survey photographer Timothy O'Sullivan took the first photographs of the Grand Canyon in the fall of 1871, but tragically, most of his almost three hundred glass plates were damaged in shipment to Washington, D.C. This view of a Grand Canyon wall (note the figures on the beach beneath) is one of the few that survived.

O'Sullivan's glass plates were unpacked. Most of the negatives exposed in the Grand Canyon had been damaged irreparably in transit. Probably fewer than a dozen survived, although O'Sullivan had produced nearly three hundred negatives. One cannot but sympathize with both O'Sullivan and his leader, who reported the loss: "Mr. O'Sullivan, in the face of all obstacles, made negatives at all available points, some of which were saved, but the principal ones of the collection were ruined during the transportation from Prescott, Ariz., via mouth of the Colorado, San Francisco, etc., to Washington, D.C., thus destroying one of the most unique sets of photographs ever taken."

WHEN POWELL organized his second expedition down the Colorado River, he hired photographer E. O. Beaman, who had worked previously in New York and Chicago. Beaman was probably the second man to photograph the Grand Canyon, but not while he was in Powell's service. He remained with Powell only from May through October 1871, when river travel for the year terminated at Lees Ferry, Arizona. Without having entered the Grand Canyon as yet, the expedition went into winter camp at Kanab, Utah. Beaman quit the Powell survey in January 1872. His first views of the canyon were made sometime after April 15 and before May 6, between Kanab Canyon and the vicinity of Surprise Valley.

Beaman possessed a crusty disposition which did not endear him to the other members of the survey. The diaries of the men are full of nicknames for each other but not for Beaman. Even Beaman's first name has eluded researchers. Be that as it may, no question exists regarding his ability as a photographer, for the many fine pictures he made attest to his skill.

Unfortunately, Major Powell designated an unskilled assistant to work with Beaman. This inexperienced helper was the major's young cousin and ward, Walter Clement Powell. Clem, as his shipmates called him, acquired little skill in exposing and developing plates during his eight months of tutelage, or lack of it, under Beaman. Although Clem did produce a few pictures, most of his attempts were failures, and none of his successes were in the Grand Canyon.

Some understanding of the problems can be gained by reading between the lines of Clem's diary, as he began his first solo attempts at photography:

"Jan. 4th [1872]. Fixed up my things this morning and got ready for taking pictures, but the chemicals would not work and the instruments are not worth a cent and my whole outfit is nothing but Beaman's cast off things.

"Jan. 12th. Tried picture making; did not succeed very well."

Of course, the difficulties of the wet-plate method were numerous, and the possibilities for failure were infinite even in adept hands. At the site of the picture-taking,

guncotton was dissolved in alcohol or ether to make a sticky substance called collodion. This light-sensitive material was applied to a glass plate, and the image was exposed and developed before the collodion dried. Furthermore, the large, heavy plates were difficult to store and to transport without breakage.

In the face of these obstacles, Clem exhibited quite a bit of Powell persistence. With a prospector who had joined the expedition temporarily, Clem set out in mid-January from Kanab for a trip down Kanab Canyon in hopes of obtaining some photographs. On January 18 and 19, Clem described his misfortunes in Kanab Canyon:

"Jan. 18th. Concluded to stop here a day or two and try picture making, so after breakfast was over I put up my dark tent and went to work, but 'twas no go. Finally concluded it was the water. Fixed and refixed my chemicals, filtered them, sunned my bath, etc. etc. By that time 'twas dark.

"Jan. 19th. . . . After breakfast once more tried my chemicals and though I worked extra hard all day long only took 4, and they nothing extra. There is something the matter I can't explain. I think it is the water."

On January 22 they reached the Colorado River, and the tale of woe continued:

"Jan. 23rd. I will see what I can do at the pictures. In the forenoon cleaned some glass. . . . In the afternoon tried my chemicals; took one fair picture and that was all. Something wrong somewhere as the rest were no go.

"Jan. 25. Have been working at pictures all day long but my bath will not work. Am fully satisfied that Beaman has tampered with it. Have done everything in my power to make it work but 'tis no use. The expedition is a 'bilk.' I am feeling sweetly about it. . . . I am feeling badly.

"Jan. 26. . . . Spent a miserable night. Was thinking or dreaming about pictures all night long; was glad when day at last appeared."

A young boatman and artist with the survey, Frederick S. Dellenbaugh, summed up the episode in his own journal: "On the 6th [February] Clem and Bonnemort arrived from an expedition to make photographs down the Kanab Canyon. . . . They had met with bad luck, and did not get a single negative. The silver bath got out of order, and the horse bearing the camera fell off a cliff and landed on top of the camera, which had been tied on the outside of the pack, with a result that need not be described."

Upon returning to Kanab, Clem managed to convince Major Powell's brother-in-law, Professor Almon Thompson, that Beaman had sabotaged the chemicals. Clem's diary reported:

"Feb. 6th. . . . After breakfast set up the dark tent and instruments and commenced business again. Took a few fair pictures with a new bath; could not make my old one work. Prof. is convinced that Beaman played the knave with me.

"Feb. 7th. Photographing all day long. Prof. satisfied

COLLECTION OF OTIS MARSTON

E. O. Beaman, probably the second man to photograph the Grand Canyon, was originally hired by Powell, but the views he took of the Grand Canyon were actually made independently after he left the survey. Beaman took the above photograph of the outlet of Surprise Valley near the mouth of Kanab Canyon in April-May 1872.

that the job was put on me by Beaman. Has telegraphed to Major [who was in Salt Lake City] to stop payment of Beaman's checks."

When the first segment of the Powell expedition had terminated and the party had gone into winter headquarters, Beaman had moved into a room in the fort at Kanab rather than camp nearby with the rest of the group. Then, following a disagreement with Major Powell, Beaman had resigned, sold his interest in the expedition's photographs, and left for Salt Lake City. The checks mentioned by Clem were payment for some of Beaman's services prior to quitting. Whether or not he had "played the knave" with Cousin Clem as a parting gesture is uncertain, but such a prank seems to be both uncharacteristic of Beaman and unnecessary, for Clem appears to have been sufficiently clumsy to have needed no help in bungling the operation.

When Beaman left Powell's survey, he immediately undertook his own venture. Early in February he traveled to Salt Lake City where he purchased a wagon, a team of horses, and a complete outfit for photographing the Grand Canyon and other points of interest in the Southwest. In mid-April he headed down Kanab Wash toward the Colorado River with George Riley, a prospector with whom Clem Powell had traveled in January. Beaman and Riley reached the Fern Springs Shower Bath about six miles above the Colorado River, and Beaman can be expected to have taken pictures of this photogenic locale. On April 15, Beaman wrote in his diary, "The familiar roaring of a rapid told me that the Colorado was near; and that evening we pitched our tent where the wash enters the river." Again it seems likely that he made some views, although his account of the journey does not mention this.

When one attempts to establish the earliest date on which Beaman might have photographed the Grand Canyon, a consideration must be the boundary of the canyon. By studying a topographic map, one is inclined to choose a line across Kanab Canyon from Kanab Point on the west to Fishtail Point on the east. On this basis only the lower mile and a half of Kanab Canyon is part of the Grand Canyon, while other places upstream in the wash, including Fern Springs Shower Bath and the head of running water two miles above this waterfall, are excluded.

If this boundary is accepted, it follows that the first date when Beaman might have photographed the Grand Canyon was April 15, 1872, as he approached the Colorado River. Any pictures taken in Kanab Canyon on April 14 would be outside this demarcation. The contention that Beaman's first views were made on April 15 or 16 is based on the assumption that any photographer on such a venture would have made photographs here.

Learning from a prospector about a waterfall beside the Colorado River, Beaman and Riley hiked and scrambled upstream for seven miles to photograph the scene. Beaman named the site Buckskin Cascade, though it now is called Deer Creek Falls. Later Beaman showed a picture of it to members of the Powell party and thereby enabled them to identify the spot when they reached it on September 7, 1872. At that time Dellenbaugh wrote in his journal: "We entered sedimentary strata and came to a pretty little cascade falling through a crevice on the right from a valley hidden behind a low wall. We at once recognized it as one which Beaman had photographed when he and Riley had made their way up along the rocks from the mouth of the Kanab during the winter. We remembered that they had called it ten miles to the Kanab from this place, and after we had climbed up to examine what they had named Surprise Valley we went on."

From Deer Creek Falls, Beaman and Riley had continued upstream a short distance until their passage was blocked by the canyon wall. There they scaled a cliff to reach the first main ledge, where they beheld a verdant basin which they named Surprise Valley, as it still is called. Beaman took several pictures in this valley. Then, with provisions running low, they returned to the river and built a raft on which they intended to float back down to Kanab Wash. Because the raft proved inadequate for two people, Beaman drifted down alone. Thus he preceded not only Powell's photographer but also the other river runners of Powell's second expedition in the Grand Canyon.

After a few days spent near the mouth of Kanab Canyon, Beaman returned with Samuel Rudd, a miner, to take pictures for two more days at Surprise Valley. Back at Kanab Wash afterward, Beaman discovered that local miners had borrowed his pack team, so he and Rudd hiked up to Fern Springs Shower Bath, where a small supply of food had been cached. While Beaman waited at the Bath, Rudd continued up the Wash to obtain food and mules. With evident relief, Beaman wrote on May 6: "Upon the morning of the 6th, just as my cupboard reflected the heart-rending condition of Mother Hubbard's, the most musical sound that ever agitated the atmosphere of that cañon fell upon my ear. It was Rudd swearing the mules around a boulder."

In addition to the photographs made by Beaman in the Grand Canyon between April 15 and May 6, 1872, he obtained additional views during the middle of June in the same year. These resulted from a delay incurred when, arriving at Lees Ferry en route to the Hopi villages of northeastern Arizona, he was unable to swim his pack string across the Colorado River because of high water. While waiting for the water to subside, he decided to photograph the Grand Canyon from the "Buckskin Mountains," as the Kaibab Plateau was then called. These pictures were made about June 19.

Beaman's photographs of the Grand Canyon were not widely circulated, and their quality was apparently too poor for publication with articles which he prepared for *Appleton's Journal*. Nevertheless, the E. and H. T. Anthony Company bought a set of Beaman's negatives and published some of them.

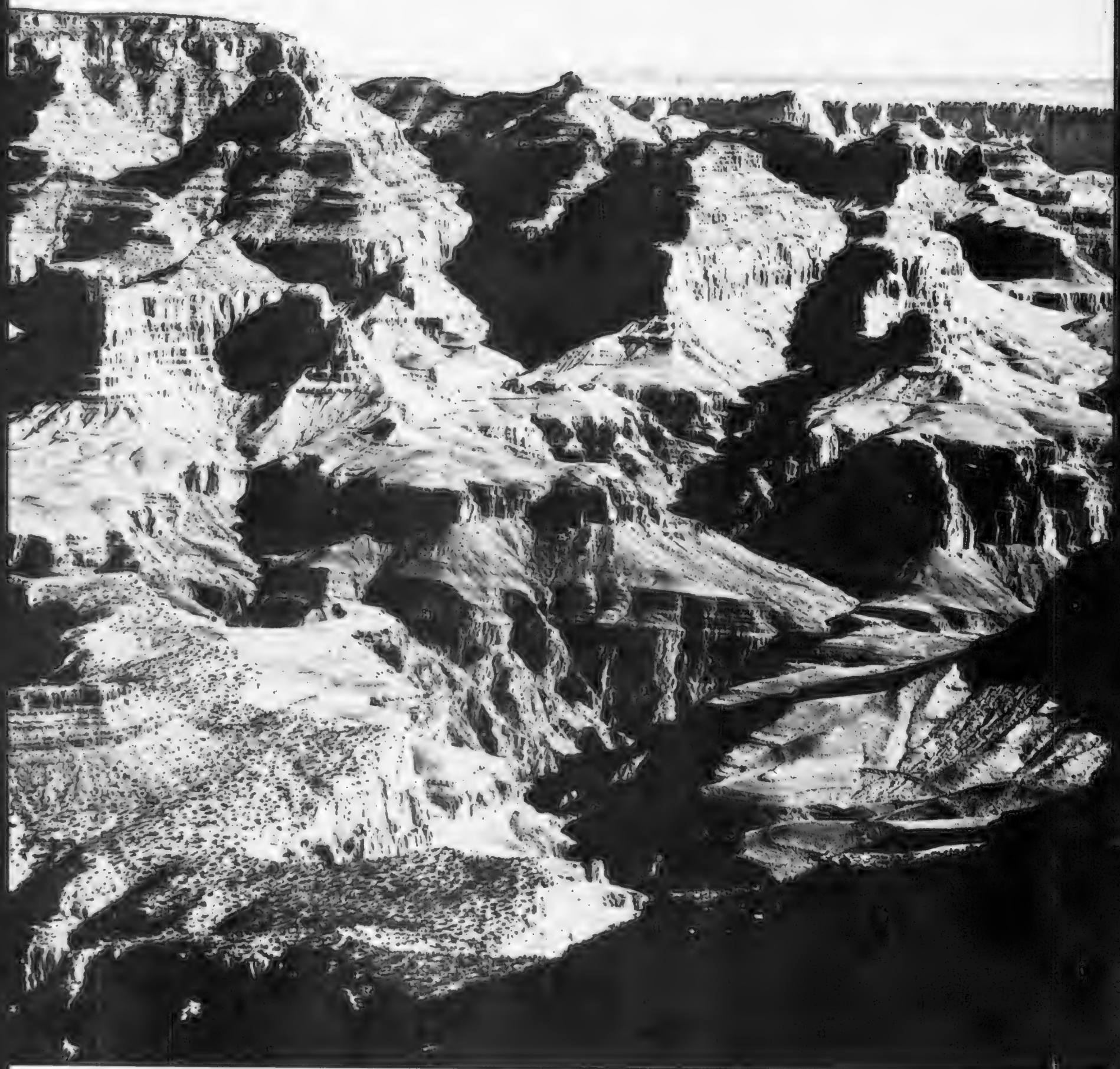
Continued on page 61

GRAND CANYON

A Color Portfolio by Milton Goldstein

From the book The Magnificent West: Grand Canyon *by Milton Goldstein, to be published by Doubleday & Company, Inc. Copyright © 1977 by Milton Goldstein.*

GRANDVIEW POINT, PANORAMA



LIPAN POINT, LOOKING EAST

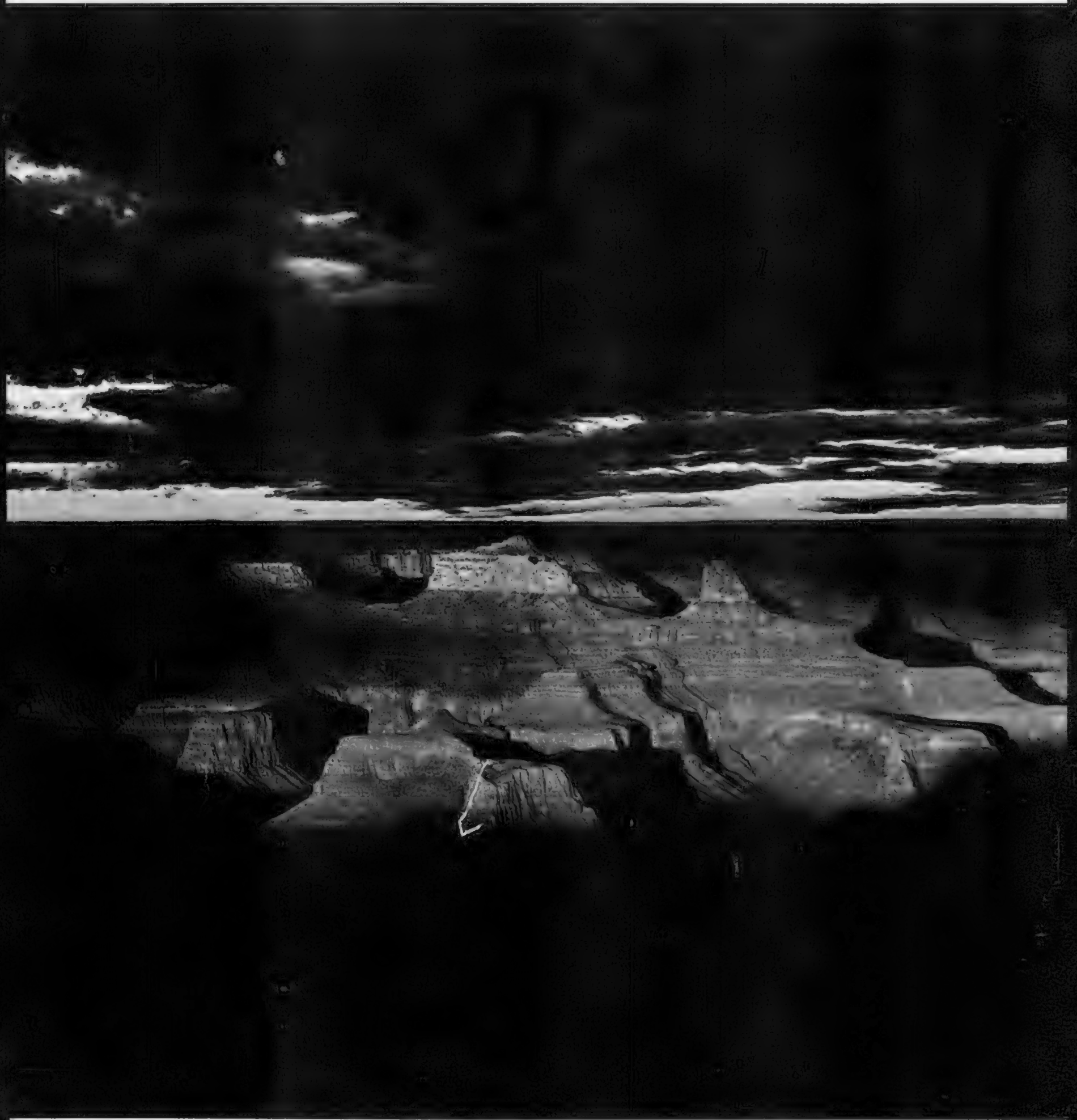
CAPE ROYAL, WOTAN'S THRONE

MATHER POINT, PANORAMA

BOTH PAGES. COLORADO RIVER FROM LIPAN POINT

ESCALANTE BUTTE FROM LIPAN POINT

HOPI POINT, PANORAMA



Milton Goldstein *is a Bishop, California, photographer and writer whose books include* The Magnificent West: Yosemite *(1973) and the forthcoming* The Magnificent West: Grand Canyon.

Indian Portraits & Parasols

"Perfect Likeness," an exhibit of portraits by Charles Bird King, Henry Inman, and lithographic artists of the early nineteenth century, will be on display until September 5 at the **Smithsonian Institution's National Museum of History and Technology, Washington, D.C.** The exhibit focuses on an ambitious early nineteenth-century lithographic project—the three volume classic by Thomas L. McKenney and James Hall, *History of the Indian Tribes of North America (1836–44)*. These lithographs, copied from King's portraits of great Native American leaders, were widely distributed on the American market and survive as a major resource for historians and anthropologists studying the Native American before the Civil War. Peter Marzio and Herman Viola of the Smithsonian assembled the exhibit in order to reexamine the accuracy and credibility of using works of art as historic documents. The 30 original King paintings and 160 lithographic copies on display encourage the visitor to use his or her visual skills to decide which portraits are perfect likenesses. A number of artifacts from the period complete the exhibit.

The Plainsman Museum, managed by the Hamilton County Historical Society, has recently opened its doors in **Aurora, Nebraska.** Inside a series of showcases, murals, and mosaics illustrate the history of the Plains, while life-size dioramas depict a fur trapper's log cabin, a sod house, a Victorian home, a 1920s frame house, a chapel, a general store, a china shop, and a blacksmith-carpenter shop.

The rugged **Palo Duro Canyon State Park,** near Canyon, Texas, will be the setting for an outdoor **musical drama of Panhandle history,** *Texas*. Now in its twelfth season, the pageant uses dance and song to evoke Texas life in the 1880s. Produced by the Texas Panhandle Heritage Foundation, a nonprofit corporation, in cooperation with West Texas State University, *Texas* plays every night except Sundays through August 20.

HAYNE HUDJIHINI (EAGLE OF DELIGHT) BY CHARLES BIRD KING, FROM THE SMITHSONIAN'S "PERFECT LIKENESS" EXHIBITION (LEFT)

Two new permanent exhibits focusing on the period 1803–1850 when the Missouri River was the highway to the frontier were recently installed at the **Kansas City Museum of History and Science,** Kansas City, Missouri. Visitors to the first exhibit, **"Rivers, Lands and Explorers,"** step onto the prow of a flatboat to attend an audio-visual presentation on nineteenth-century river life. The second exhibit, **"Traders and Trappers,"** includes a reconstruction of an 1821 trading post as well as displays depicting the fur trapper's way of life.

The City of Refuge National Historical Park in **Honaunau, Hawaii,** is located on the site of an ancient sanctuary established by Hawaiian royalty to provide refuge for lawbreakers and the war-vanquished. A **cultural festival** devoted to understanding and preserving traditional Hawaiian customs will be held at the oceanside park July 1–3.

An assortment of **Victorian accessories** can be seen at the **California Palace of the Legion of Honor** July 16 through October 1. The display includes parasols, fans, bonnets, shawls, boots, mittens, underpinnings, and other fashionable accouterments once favored by well-dressed Victorian ladies.

The Fort Larned Historical Society in **Larned, Kansas,** will sponsor an unusual **wheat harvesting demonstration** on the Fourth of July. A replica of an 1831 horse-drawn McCormick reaper will be pitted against men using scythes with cradles in an old-time harvesting contest, to be held in a field near Larned's Santa Fe Trail Center.

Approximately 250 vintage photographs illustrating the change from formal to documentary-style photography that occurred over the first thirty-two years of this century comprise **"California Pictorialism, 1900–F64,"** an exhibit on view July 26 through September 11 at the **Los Angeles County Museum of Art.** Featured among the photographers who manipulated prints and negatives to achieve formal pictorial perfection will be Annie Brigman and Arnold Genthe; Oscar Maurer and Edward Weston are among the representatives of the documentary technique. The exhibit will travel to the University Museum in Austin, Texas, later in the year.

The twenty-eighth annual celebration of **Chief Joseph Days,** one of Oregon's major rodeos, will be held July 29–31 in **Joseph.** In addition to the traditional rodeo fare, festivities honoring the famed Nez Percé chief will include an evening pageant of Native American dances.

The centennial anniversary of the Battle of Big Hole, fought between the Nez Percés and the Seventh U.S. Infantry on August 9, 1877, will be marked by revised exhibits and a summer commemoration at **Big Hole National Battlefield, Wisdom, Montana.** The coat worn by Chief Joseph when he surrendered in October of that same year is among the new displays at the Battlefield Visitor Center; on August 9, Allen Slickpoo, Nez Percé tribal historian, is scheduled to speak on the Nez Percé people today. Following the talk, the Nez Percé Tribal Dancers from Lapwai, Idaho, will perform.

Continued on page 51

The Names

REVIEWED BY JACK BURROWS

IN A LITERARY MARKET awash with memoirs and autobiographies that reek of self-loathing or effuse narcissistically on the joys of coming to terms with sexual aberrations, N. Scott Momaday's

The Names by N. Scott Momaday *(Harper & Row, New York, 1976; 170 pp., illus., glossary, $10.00).*

The Names redeems one's faith in that particular art form. Part Indian (Kiowa) and part white, Momaday's first book, *The Way to Rainy Mountain* (1967), was a poetic memoir on the origins of his people and his own sense of place in their oral tradition and culture. Rainy Mountain (which is a real landform as well as a title, and whose physical and symbolic presence is integral to all of Momaday's work) then became the background for his first novel, *House Made of Dawn*, for which Momaday, then a young professor of English at the University of California (he is presently at Stanford), received the Pulitzer Prize in 1969.

Momaday's newest book, *The Names*, intellectually and stylistically transcends the measured speech cadences and tautologies we tend to associate with writing about and by the Indian. Momaday is an enormously civilized writer who, even as a child, came to regard both the external and internal worlds as his patrimony, approaching each with all senses open and receptive. And because of a loving family —an artistic and concerned father, a beautiful and sensitive mother ("even now I cannot express the feelings between us")—he learned to love and respect himself, and so the world and people about him.

The Names is an affectionate and hauntingly beautiful memoir, stately in form, luxuriant in description and detail. There is none of the fashionable anger here, no "Uncle Tomahawks," no "Apples," no "Whiteys," no charges of genocide, no *Custer* (who) *Died For Your Sins*, no anathematized rebuttals of all things that are non-Indian. Up to his fourteenth year, the span of the book,

Momaday lived among the cosmic landforms and vermilion colors of the Southwest—Indian (Rainy Mountain) country. He came to early youth richly aware of a coherent order to the Indian world of circumambient powers, a coherency based on inculcated submission to totemic associations, events, ritual, trees and animals, origins and death; all of which are associated with the elemental forces and landscape aberrations of nature: "Events do indeed take place; they have meaning in relation to the things about them. . . . I existed in that landscape, and then my existence was indivisible with it.

There were nights when he lay in the homes of relatives, listening to the soft and lugubrious voices, the muted laughter, a time both evanescent and eternal. He was *Tsoai-talee*, Rock-Tree Boy, named for Devil's Tower, which the Kiowas regarded with awe as they passed it during their migration from the Yellowstone and before emerging, symbolically, from the "hollow log" onto the Southern Plains.

And yet there was also Scott Momaday, an "affable" little chap whose mother insisted that English be his language. Momaday later said wistfully, "I was much alone . . . my peers were at removes from me, across cultures and languages." But he was the white boy, too, who grew up during World War II, infused with patriotism and ready to fight when friends called him "Jap." In his mind he was a fighter pilot, stuttering machine gun bursts that sent tracers looping brightly out like unraveling spaghetti toward the hapless Zero. Even so, he was Indian; "They [the "Japs"] say he's an Indian that he wears an eagle feather has the eyes the heart of an eagle." This in a burst of free-flowing consciousness, Joycean in its explication, which continues in the same breath: "I don't know how to be a Kiowa Indian." In one very unIndianlike confession he "discovered the dark joys of masturbation," and he felt "depraved," "perverted." Here he seems closer to Huck Finn and his racially imposed conscience than to *Tsoai-talee* and his transcendent world of circumambient powers.

Yet Momaday is not entrapped in a historical déjà vu or in a conflicting ambivalence. He is engaged in no literary search for identity or for his roots. A "hollow log" bears no roots, but it can be a conduit for the transmission of an oral tradition: When the time came to leave Jemez, his home, he traveled north in his mind, riding his horse across the ineffable landscape to the top of the world—through herds of buffalo that parted like a "hem stitch," rising higher than the eagle-feathered "pilot" flew—where "in a pool of light . . . [he] touched the hollow log." It was *Tsoai-talee*, the Rock-Tree Boy, who left Jemez as the man.

In a larger sense, *The Names* is an impalpable confirmation of all our roots, symbolized, perhaps, by the duality of Momaday's own family tree. One does not read this book with the sense of guilt one feels in the reading of Alex Haley's *Roots*. Ethnicity, guilt, and shibboleths common to us all are transcended, understood, somehow put in perspective against nature and its eternal landforms. *The Names* does not establish Momaday as a major American writer: it confirms him. Should there be a sequel, or a trilogy, Rainy Mountain may become as familiar to us as Faulkner's Yoknapatawpha County and Steinbeck's Salinas Valley and Cannery Row.

Jack Burrows *teaches American history at San Jose City College, California.*

RECENT WESTERN BOOKS

The Vanishing Race: Selections from Edward S. Curtis' The North American Indian edited by Mick Gidley *(Taplinger Publishing Company, New York, 1977; 192 pp., illus., intro., notes, index, $9.95).*

Few white Americans have understood and interpreted the spirit of Native American cultures with the sensitivity of photographer Edward S. Curtis, who spent thirty years traveling throughout the western states, immortalizing the ways of a vanishing race with his poignantly beautiful photographs. This inexpensive book includes eighty examples of Curtis's work accompanied by selections from his observations on and interviews with Native Americans.

Seattle: The Life and Times of an American City by Gerald B. Nelson *(Alfred A. Knopf, New York, 1977; 206 pp., $8.95).*

In 1852 young Seattle's first sawmill opened for business; today this industry-dominated coastal city is shouldering a large-scale unemployment crisis with true frontier spirit. This personable, thought-provoking book explores Seattle's growth from a gold rush boomtown to a twentieth-century metropolis with an uncertain future.

Hawaii-Nei, The Kingdom of Hawaii 100 Years Ago compiled by Skip Whitson *(Sun Publishing Company, P.O. Box 4383, Albuquerque, New Mexico, 87106, 1976; 40 pp., illus., $3.50 paper).*

Detailed wood engravings depicting nineteenth-century Hawaii complement an amusing and informative description of Island life in this enjoyable booklet, one in a series of reprints assembled from old *Harper's* and *Scribner's* magazines.

Mustang: Life and Legends of Nevada's Wild Horses by Anthony Amaral *(University of Nevada, Reno, 1977; 165 pp., illus., map, notes, $9.00).*

Descended from horses brought to the New World by Spanish *conquistadores*, the mustang once roamed the West in bands often numbering twenty thousand, until, in the late nineteenth century, ranchers declared them a nuisance to the range. Then the slaughter started. The story of these remarkable wild horses and their struggle for survival is accurately presented in this fascinating small book.

ILLUSTRATION FROM "DISFARMER: THE HEBER SPRINGS PORTRAITS"

Disfarmer: The Heber Springs Portraits with text and editing by Julia Scully *(Addison House, Danbury, New Hampshire, 1976; 135 pp., illus., $22.50).*

Photographer Mike Disfarmer's stark, powerful portraits of the residents of Heber Springs, Arkansas, taken during World War II, provide unique documentation of the pride, simplicity, and stoicism characteristic of small-town Americans. The accompanying text focuses on the effect the war had on the lives of these people and discusses the eccentric photographer himself.

Indian Dances of North America by Reginald and Gladys Laubin *(University of Oklahoma, Norman, 1977; 538 pp., illus., notes, index $25.00).*

Twenty-five vivid color plates, black and white photographs, and the authors' own drawings richly illustrate this comprehensive volume on traditional Native American dances. The Laubins, who are professional dancers, provide a clear explanation of the techniques involved in performing each dance.

Nebraska Photographic Documentary Project by Robert Starck and Lynn Dance *(University of Nebraska, Lincoln, 1977; illus., intro., $12.95 paper).*

The joint effort of two young photographers produced this absorbing, intimate pictorial record of contemporary Nebraskan people and places.

Railroad: Trains and Train People in American Culture edited by James Alan McPherson and Miller Williams *(Random House, New York, 1976; 185 pp., illus., intro., $7.95 paper).*

This well-designed book looks at the colorful history of America's railroads through photographs, poems, songs, and a wonderful collection of essays by, among others, Thomas Edison and Thomas Wolfe. The Underground Railroad, modern commuter trains, and the complex jargon of engineers and hoboes are some of the topics covered.

Will Rogers Rode the Range by Margaret Shellabarger Axtell *(The Beatitudes, Phoenix, 1972; 168 pp., illus., biblio., $7.95).*

Written with affection, this large-format book honors one of America's best-loved humorists, Will Rogers. The author, who began collecting material on Rogers after his tragic death in 1935, emphasizes the period when young Will worked as a cowboy in Texas, one of the most influential experiences of his life. A good assortment of photographs highlights the text.

California's Old Missions by Paul H. Kocher *(Franciscan Herald Press, Chicago, 1976; 177 pp., illus., appen., notes, biblio., index, $6.95).*

In a fresh look at California's twenty-one missions, established in the 1700s by Spanish Franciscans, Paul Kocher discusses the founding of the different missions and capsulizes their subsequent histories. Each mission's variations on the classic architectural style can be noted in the accompanying black and white photographs.

Helldorados, Ghosts and Camps of the Old Southwest by Norman D. Weis *(Caxton Printers, Caldwell, Idaho, 1977; 365 pp., illus., maps, intro., biblio., index, $9.95).*

The exciting, sometimes mysterious stories of sixty-seven southwestern ghost towns and camps are told in this appealing book, thick with excellent photographs and maps. Well-known ghost towns like Virginia City and Gold Point are mentioned; and a town with no written record, Wolf, Colorado, leaves the reader with an intriguing puzzle to solve.

HISTORY TODAY

(Continued from page 48)

Summer visitors at **Yosemite National Park** in **California** can participate in a special Living History Program between July 1 and Labor Day. An old covered bridge will serve as a time tunnel into the park's past at the **Pioneer Yosemite History Center,** where visitors can talk with costumed guides and explore seven buildings dating from 1870 to 1915.

The **international boundary between Canada and the United States** is the subject of a photographic exhibit, "Between Friends/Entre Amis," on view July 1 through August 31 at the **Amon Carter Museum of Western Art, Fort Worth, Texas.** Thirty-two Canadian photographers commissioned by the National Film Board of Canada took the photographs as they traveled eastward along the border from Vancouver Island to Passamaquoddy Bay.

Cottage Grove, Oregon, will hold a **Bohemia Mining Days festival** July 14–17 to commemorate the historic Bohemia gold mine strikes. Activities will include a rodeo and train rides to the Bohemia mining district in the Cascade Mountains.

Machine and engine buffs should enjoy the **Oklahoma Steam Threshers Association Show,** July 15–17 at the **Pawnee Fairgrounds.** Early gasoline engines and over thirty steam-powered tractors will be displayed and demonstrated. These **antiques on wheels** will plow fields, run grist and saw mills, thresh wheat, and participate in "slow races." A typical turn-of-the-century farm has also been re-created for the show.

The **Forest History Society** will hold its thirty-first annual meeting October 11–13 at the Western Forestry Center in **Portland, Oregon,** coinciding with the Western History Association's annual conference in the same city (October 12–15).

The **Arizona Historical Society in Tucson** is planning a summer exhibit featuring the work of **Paul Rossi,** former director of the Thomas Gilcrease Institute of American History and Art in Tulsa and a nationally recognized western artist and scholar. The society's own collection of Rossi's **miniature bronze saddles** will be displayed on the mezzanine, along with a selection of **historic saddles and horse equipment.**

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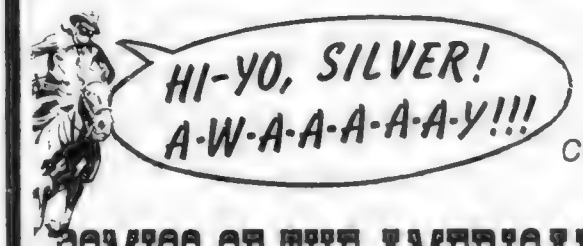

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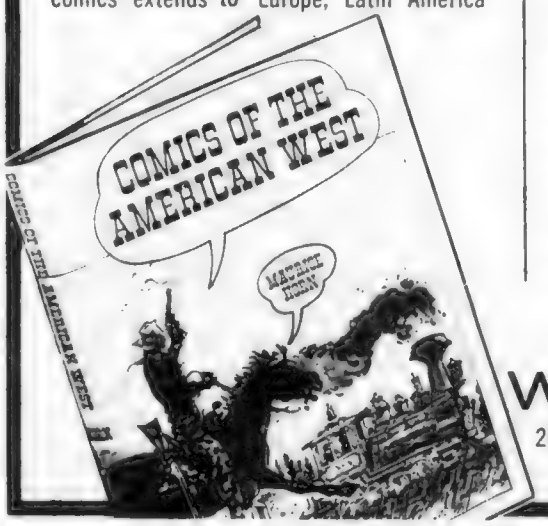

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Blacks in the West by W. Sherman Savage *(Greenwood Press, Westport, Connecticut, 1977; 246 pp., intro., biblio., appen., index, $14.95).*

REVIEWED BY THEODORE KORNWEIBEL, JR.

PROBABLY NO SCHOLAR has combed so many small-town newspapers, local histories, obscure memoirs, and historical society publications for so long (fifty years) to piece together the story of Afro-Americans in the West as W. Sherman Savage.

The result is a readable survey of Black contributions to the settlement of the various frontiers; participation in the military and a host of civilian occupations from menial to entrepreneurial to professional; often futile and always outnumbered efforts to secure the most elementary civil rights; as well as efforts, especially through churches, schools, and newspapers, to form self-respecting communities.

Familiar faces like Nat Love and James Beckwourth pass through Savage's pages, but what is more illuminating are the dozens of short biographies of lesser-known men and women who faced all the hardships of western pioneering with the additional burden of color.

That they prospered best in areas where they were most concentrated, particularly in California and Kansas, is not surprising; and it is on these states that the author has a preponderant amount of data. That little can be said of Blacks in, say, Idaho, bespeaks that state's small Black population up to the turn of the century (Savage ends his narrative there), not the author's lack of diligence.

For the scholar, there are new bits of information as well as several topics that an imaginative oral historian might investigate.

The general reader's essential western bookshelf may already contain Philip Durham and Everett L. Jones's *The Negro Cowboys* (1965); William L. Katz's *The Black West* (1971); Arlen L. Fowler's *Black Infantry in the West, 1869–1891* (1971); Kenneth W. Porter's *The Negro on the American Frontier* (1971); and William H. Leckie's *Buffalo Soldiers: A Narrative of the Negro Cowboy in the West* (1970). Professor Savage's fair-minded summation of his race's western experience should make a worthy addition.

Theodore Kornweibel, Jr., *teaches Afro-American history at San Diego State University and is the author of* No Crystal Stair.

California: A Bicentennial History by David Lavender *(W. W. Norton, New York, 1976; 243 pp., illus., maps, biblio., index, $8.95).*

REVIEWED BY PATRICIA KOLLINGS

TO ATTEMPT to tell the burgeoning, four-century, multi-flag history of California in a little over two hundred pages—and small ones at that—sounds almost preposterous. Nonetheless, that seems to have been the commission for this book, one of a fifty-one volume bicentennial series sponsored by the American Association for State and Local History.

If one wonders a bit at the association's optimism in assigning such a project, there can be little criticism of its wisdom in choosing David Lavender to carry it out. He has not only met the challenge of including virtually everything of importance that ever happened in the state, but he has made it all accessible to the ordinary citizen.

This is not intended to be a book for the historian. But for readers not already familiar with the people and events it chronicles, it admirably provides all they may want to know about California in one small volume. Such an account cannot, of course, pause to debate the moot issues of California history. Yet, to his credit, Lavender usually lets the reader know those cases where the jury is still out.

As narrator, Lavender has his feet planted firmly in the present, looking backward. Events of the more distant past are thus necessarily foreshortened. The state's first 250 years—"The Hispanic Legacy"—are digested in only eighteen pages; by page 49 (curiously) the reader is already hearing Sam Brannan cry "Gold on the American River!" Such a posture, however, allows the author to focus more attention on recent decades and current dilemmas.

While David Lavender's concern seems, as always, to be with his reader, one suspects that in the original planning for the book and the series, the association's eye was on the record. Such a history somehow had to be written, a sort of *rite de passage* into the third century. (We Americans do things like that.) And when one contemplates the rash of other commemorabilia that the national birthday has generated, *California: A Bicentennial History* emerges as one of the worthier efforts.

Patricia Kollings, *former editor of books for American West Publishing Company, teaches at the University of Santa Clara.*

The Coloradans by Robert G. Athearn *(University of New Mexico, Albuquerque, 1976; 430 pp., illus., maps, biblio., notes, index, $15.00).*

REVIEWED BY LARRY L. MEYER

"DON'T CALIFORNICATE COLORADO" was a bumper sticker I saw frequently on Denver streets during a 1972–1973 sojourn in the Queen City of the Plains. At the time I felt Coloradans were putting on airs by placing themselves in the same league as the Golden State. And beneath that clean conservation-minded slogan I thought I saw the old soiled linen of blowhard boosterism, which put the "Silver State" with its "champagne air" in a flatland bunk just to the left of Texas.

Colorado is not California, nor is it Texas. It's a special case among western states, as Athearn, a professor of history at the University of Colorado, ably demonstrates in this very readable book. Along the central section of the Rockies the familiar sequence of western settlement was rushed. This quick passing of the frontier period the author attributes in large part to the blue breed drawn toward Pikes Peak—purposeful and passably-educated northeastern WASPs.

Colorado's Anglo history is here in comprehensive capsule: the salty days of boom-and-bust placer mining . . . the sufferings and triumphs of the sodbusters . . . the arrival of well-heeled "one-lungers" . . . the railroads . . . stockmen and speculators and vacationers . . . Dust Bowl days and depression. What is new is the summation of post-World War II Colorado in the throes of a boom-crisis that pits old-line expansionists and pitchmen against the ecologically concerned. The latter, many of them brash newcomers, have flexed their muscle at the polls and given Colorado a dual reputation as mountain-state maverick and bellwether.

Athearn's prose is not of the passionate stamp, but it has the virtues of detachment and understatement, which give the writing a traditional quiet elegance and an affinity for irony. *The Coloradans* will be read with interest and pleasure by those far from the Central Rockies, and at least with interest by those living just under the mountain wall; some of the author's wry observations on Babittry in Boulder and dementia in Denver won't please all the locals.

Larry L. Meyer, *former editor of* Colorado *magazine, is the author of the forthcoming* California Quake.

Women of the West by Dorothy Gray *(Les Femmes, Millbrae, California, 1976; 179 pp., intro., illus., biblio., index, $5.95 paper).*

REVIEWED BY PAMELA HERR

DURING THE NINETEENTH CENTURY, as eastern women smothered in the airless velvet box of Victorianism, western women were developing the independence and fortitude they needed to survive in a raw, new land. Twenty such women, each profoundly shaped by both the challenges and blunt facts of life in the frontier West, are the subjects of this stimulating book by Dorothy Gray.

"The West," the author points out in her introduction, "offered not only the opportunity but the necessity of being the fullest, strongest, most independent and competent person that any woman or man could be. The adventure for women was not only one of physical survival but of psychological growth." Given these circumstances, it is not surprising that many remarkable women emerged in the West and that it was there, beginning in Wyoming Territory in 1869, that women first gained the vote.

The author's western women are well-chosen and their lives relevant to our concerns today. The book begins with Sacajawea, whom Gray sees as playing a "crucial role in the success" of the Lewis and Clark Expedition. Separate chapters are also devoted to Oregon missionary Narcissa Whitman, the first white woman to cross the Rockies; Juliet Brier, who survived a harrowing trip across Death Valley in 1849; Dame Shirley (Louise Clappe), the gold-rush chronicler whose writing became real and vivid only when she moved west; Ann Eliza Young, Brigham Young's much-maligned runaway wife; Susette La Flesche, an Omaha chief's daughter who worked for her people's rights; and Willa Cather, who introduced "an authentic West" into American literature. In other chapters, Gray treats minority women, early professional women, women on the cattle frontier, pioneer farm women, and western suffragists.

Gold-rush correspondent Dame Shirley may have best expressed the profound effect the West had on these women: "And only think of such a shrinking, timid, frail thing as I *used* to be," she wrote from a rough California mining camp. "I *like* the wild and barbarous life. . . . Here, at last, I have been contented."

Pamela Herr *is senior editor at* The American West.

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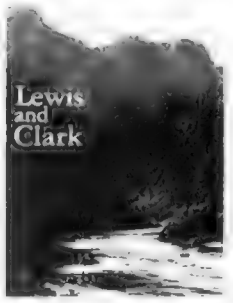

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Borderland in Retreat: From Spanish Louisiana to the Far Southwest by Abraham P. Nasatir *(University of New Mexico, Albuquerque, 1976; 175 pp., intro., maps, biblio., index, $12.00).*

REVIEWED BY JOHN L. KESSELL

FEW SCHOLARS have blocked out an area of study and then stuck with it as tenaciously or as productively as has Abraham P. Nasatir. Through more than fifty years of teaching and research, beginning at Berkeley under Herbert Eugene Bolton with a master's thesis on "The Chouteaus and the Indian Trade of the West," he has made the shifting frontiers of Spanish Louisiana his own.

Out of the blur of excitable Frenchmen and Spaniards, aggressive, enterprising, and "implacably grasping" Englishmen and Anglo-Americans, and Indian nations recognized only by name, all jostling in the vastness of mid-continent for trade or territory or the freedom to do their own thing, Nasatir has brought into focus six frontiers.

One was the Mississippi itself, a swollen vein that collected rather than repulsed aggressors. West of it and north of the Arkansas lay the country Nasatir labels Spanish Illinois. Farther on, in the drainage of the Upper Missouri, British fur traders seized the initiative and hung on even after the Louisiana Purchase.

Fourth and fifth frontiers, which common Spanish sovereignty did little to erase, followed the roads to Santa Fe and San Antonio. Last and longest, the sixth frontier came into being when the United States bought Louisiana. It ebbed and flowed with American expeditions and Spanish counter-expeditions, until in the Transcontinental Treaty of 1819, Spain lost all she had claimed and more.

Nasatir defines and chronicles his frontiers in seven essays (the Mississippi warrants two). Each is supported by a bibliographical note on pertinent works, a remarkable number of which are by Nasatir himself.

Taken together, *Borderland in Retreat* is a complex panorama set in perspective. It is also the statement of a mature scholar who has shed the semianonymity of "this writer" to say with authority, "I thought I should synthesize my life's work." It is this reviewer's opinion, rather *I* say, he has done just that.

John L. Kessell, *free-lance historical researcher, is the author of* Friars, Soldiers, and Reformers, *about the Arizona-Sonora mission frontier.*

Broadcloth and Britches: The Santa Fe Trade by Seymour V. Connor and Jimmy M. Skaggs *(Texas A&M University, College Station, 1977; 225 pp., illus., maps, biblio., index, $10.95).*

REVIEWED BY WAYNE GARD

AMERICAN TRADE with the isolated town of Santa Fe, which began soon after Mexico threw off the Spanish yoke in 1821, brought profit to many a Missourian, spurred dreams of empire, and gave rise to a large body of romantic literature. Those who didn't die of thirst on the long trail or have their hair lifted by Comanches had vivid memories to record. The resulting diaries and chronicles, written by traders, soldiers, and journalists, fill several shelves.

Although at first glance another book in the field may seem superfluous, this one has ample justification. Two seasoned historians, Seymour V. Connor of Texas Tech University and Jimmy M. Skaggs of Wichita State University, have carefully studied the primary source material on the trade, beginning with Josiah Gregg's basic work of 1844, *Commerce of the Prairies*. They have synthesized all of this data, published and unpublished, and placed it in a single, comprehensive volume.

The book traces the origins, rise, extent, and decline of the trade that brought consumer goods and draft animals to the Santa Fe area and carried back beaver pelts and buffalo robes. It depicts the federal survey of the route, the hostility of the Plains Indians, the extravagant Texas claim to much of New Mexico, the occasional army escorts for the wagon trains, and the disruptive effects on the Santa Fe trade of the Mexican War, the Civil War, and the building of the western railroads.

Much of the value of this study is in placing the Santa Fe trade in its historical setting. It shows how the trade was influenced by political happenings in Mexico, Texas, and Washington, D.C., and how the trade helped to determine future events.

Despite its informal title and the easy flow of its narrative, the book is one of sound scholarship. Without becoming encyclopedic, *Broadcloth and Britches* puts the action and significance of the Santa Fe trade into a convenient and attractive capsule.

Wayne Gard *is the author of* The Chisholm Trail, The Great Buffalo Hunt, *and other books on the West.*

Nevada: Land of Discovery by David Beatty and Robert O. Beatty *(First National Bank of Nevada, 1976; 192 pp., intro., illus., biblio., credits, acknow., $35.00).*

REVIEWED BY WILLIAM D. ROWLEY

PUBLIC-SPIRITED business enterprises often commission historical and pictorial portraits of the regions they serve. Sometimes the success of these ventures does not extend beyond the publicity returns to the business, but on occasion an important contribution is made. *Nevada: Land of Discovery* is such a publishing occasion sponsored by the First National Bank of Nevada. With over 300 large, color photographs in 190 pages, this work offers the reader narrative insights and pictorial overviews of the vast and forbidding land called Nevada.

The accompanying text accurately tells us that Nevada remained a mystery and a land of discovery for early explorers. For the Spanish it would always be a part of their "Northern Mystery." The Great Basin was not fully understood until John C. Frémont's explorations in the 1840s. He, too, wrote in wonderment and amazement of the discovery he had made: "The whole idea of such a desert is a novelty in our country, and excites Asiatic, not American ideals."

This is not a book that one reads, although the text flows smoothly, guiding the reader along the rickety staircase of Nevada's nineteenth and twentieth century history. It is a high-quality coffee-table book whose photography is meant for viewing and study, and to cause reflection on the people who have lived against the background of this stark land. The photographic essays are oriented toward Nevada's natural environment and toward the places where people have once lived but no longer remain. The glamor and artificiality of Reno and Las Vegas do not appear. It is the land, its ancient upheavals, and the marks left upon it by the mining and ranching empires of another day that fill these pages.

Such a book, emphasizing rural Nevada, its mining heritage, and its wide open spaces has a special appeal in a state whose population is now nearly ninety percent urban, ranking next to Rhode Island as the second most urban state in the Union. The authors as well as First National Bank are to be congratulated on the quality of this work.

William D. Rowley *teaches the history of Nevada at the University of Nevada, Reno.*

United States–Comanche Relations: The Reservation Years by William T. Hagan *(Yale University, New Haven, 1976; 352 pp., illus., maps, biblio., notes, index, $19.50).*

REVIEWED BY CRAIG MINER

WILLIAM HAGEN is a serious scholar whose interest in Indian history is of the type that leads him to the voluminous sources in Washington and Oklahoma where lasting contributions receive flesh. This book is especially important because it treats the reservation period, an epoch where even the popularizers have barely trod.

The book is clearly written and well illustrated. Its strongest point, however, is research—research that takes the reader beyond clichés and into the complex, intimate pattern of the last years of Comanche sovereignty.

A good sense emerges of the difficulties of agents with the military as well as the special problems of Quakers with Comanches. The detail on the assimilation program, from farming failures to schools, is excellent. It is not just stated that squaw men were applying pressure, nor that opportunities for profit promoted intratribal factionalism. The reader learns who the individuals were and much about their techniques and motives. Hagan's analysis of the rise of Quanah Parker provides a classic example of the pattern of "progressive" leadership.

This careful research turns up many scenes which make empathy possible. It is known that the buffalo vanished quickly, but how striking to learn that by the eighties the Kiowas had to buy a buffalo head for their ceremonials from a white rancher. What pictures for the mind are the descriptions of the converted icehouse used as an Indian prison, its inmates living in pup tents inside; or the Indian school with barbed wire across the transoms; or the fake "buffalo hunt," using cattle, for the entertainment of whites. From Ten Bears's speech at Medicine Lodge forward, the book is also filled with examples of Indians speaking for themselves.

This, in short, is a first-rate history, the kind that makes the nit-picking of any reviewer largely beside the point. It will be a standard for a long time.

Craig Miner, *associate professor of history at Wichita State University, is the author of* The Corporation and the Indian: Tribal Sovereignty and Industrial Civilization in Indian Territory, 1865–1907.

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DUST BOWL

(Continued from page 27)

ever, prevented the wheat from growing, and the strong prevailing winds quickly began to blow the bare, dry soil over a wide area. By the spring of 1934, the vast majority of the farmers and ranchers were willing to adopt the necessary measures to prevent soil blowing. The Soil Conservation Service was instrumental in helping control soil erosion by using private land to demonstrate proper soil-conserving techniques. The farmers, cooperating with the Soil Conservation Service, signed five-year contracts in which they permitted the SCS to work conservation programs on their land and agreed to follow its recommendations. The Civilian Conservation Corps also established camps in the Dust Bowl which provided manpower to aid both the Soil Conservation Service and the farmers in their conservation efforts.

Basically the SCS program stressed implementation of emergency tillage, contour plowing, terracing, strip cropping, and revegetation of pasture lands. Emergency tillage involved plowing deep, cloddy furrows contrary to the prevailing winds. These furrows reduced wind velocity over the ground surface and caught blowing soil. The most useful implement for this tillage measure was the lister—essentially a double moldboard plow that split the furrow and turned the slice each way. But virtually any implement that left the surface in a rough, cloddy condition helped to check soil movement: thus, the narrow-tooth chisel, the duckfoot cultivator, and the spring-tooth harrow were all effective. When farmers used the lister on the contour instead of pulling it straight up and down a hillside, the curving furrows caught virtually all the precipitation where it fell, prevented runoff, and permitted a more abundant vegetative growth than did land not farmed on the contour. The Soil Conservation Service provided the necessary technical expertise and equipment to encourage farmers to terrace their fields in order to prevent water erosion and to store moisture in the soil. It also effectively demonstrated the importance of planting drought resistant crops such as sorghum, kafir corn, and sudan grass in wind-retarding strips intermittently spaced across a field. Strip crops served to protect fallowed lands and wheat fields by collecting snow, checking soil drifting, and providing a dense stubble and root system. Dust Bowl farmers found that they could significantly check wind erosion when they planted half of their lands with strips of densely grown feed grains and native grasses.

In order to check wind erosion entirely, though, the pasture lands had to be restored. Approximately 65 million acres in the Dust Bowl remained in grass through the decade, but the carrying capacity of the range and pasture land was far below normal. Overgrazing and drought had stunted the grass, and the surface was completely bare in some areas. Under the guidance of the Soil Conservation Service, farmers began to practice pasture resting by rotation of grazing lands. They also discovered the importance of contour furrowing pastures with a lister, moldboard, or chisel plow in order to decrease the runoff and hold as much precipitation as possible. When farmers properly contoured pastures and implemented wise grazing practices, pasture growth increased as much as 50 to 100 percent; the exact growth depending on the sod's condition prior to contouring, the neighboring blow areas, and the rainfall.

Approximately 5 million acres of the 32 million under cultivation were submarginal land—land that even under the most favorable conditions did not provide sufficient returns to be profitable. The SCS recommended that such land be revegetated with native grasses. During most of the decade, though, efforts to re-establish grass on submarginal lands generally failed because the drought prevented the grass seed from germinating. As late as 1938, the Russian thistle was contributing more to the stabilization of submarginal lands than efforts at revegetation.

At last, during the summer of 1938, the Dust Bowl received good rains which enabled farmers to plant soil-protecting crops. A year later the Dust Bowl had shrunk to the smallest area since 1932, and the wind during the blow months

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By 1936 when this photograph was taken, most farmers were applying the emergency tillage measures recommended by the Soil Conservation Service. Here, a farmer near Liberal, Kansas, lists his field to check the blowing soil.

was less damaging than at any time since 1934. In 1940, the Dust Bowl received adequate precipitation, and for the next decade above average rainfall occurred in the Southern Plains.

Throughout the 1940s the farmers and ranchers in the Southern Plains prospered from bumper crops and high prices. During the ten-year period from 1941 to 1950, though, another big plow-up occurred on the edge of the Dust Bowl, where the sod was broken for wheat in Colorado and for cotton in west central Texas and eastern New Mexico. Farmers broke about 4 million acres at this time, 3 million of which was submarginal land and unfit for cultivation.

Drought returned to the Southern Plains in 1951, and by 1952 it was severe in the Dust Bowl. Soil blowing became a menace on the newly plowed lands, on the poor wheat lands where no crop had been raised for three or four years, and on the poorly managed grazing lands. Serious dust storms in the spring of 1954 and 1955 once again darkened the sky with a reddish brown haze and sometimes reduced visibility to zero, drifted soil along fence rows, piled sand dunes twenty to thirty feet high in some fields, and ruined crops.

Although drought and erosion affected a larger area than during the 1930s, the Dust Bowl did not return to the conditions of twenty years earlier. The conservation techniques implemented during the previous two decades prevented that. Farmers no longer burnt their wheat stubble. Instead, they used the one-way disc and chisel plow which tilled the soil but left the stubble on the surface. Contour plowing, strip cropping, and grazing management were now standard farming procedures. Furthermore, the Dust Bowl farmers did not have to contend with the financial problems of a depression, and so they were better able to survive the drought and properly farm their blowing lands. The federal government once again provided funds for those farmers in financial difficulties so they, too, could apply the proper conservation measures to their eroding fields. Colorado, Kansas, and Texas also implemented soil conservation laws requiring farmers to apply emergency tillage measures to their lands. If they refused to do so, the work was done for them and the cost assessed to their taxes. In this way, farmers who practiced soil conservation were protected from those who did not.

In retrospect, the destruction of the native grass from the cumulative effects of drought, prairie fires, and overgrazing caused the dust storms of the nineteenth century; while the exposure of cultivated lands to drought and wind caused those of the twentieth. Certainly, the dust storms of the 1930s occurred more frequently and with greater severity than ever before. Their cost in terms of damaged soil, ruined dreams, and human lives is, of course, incalculable. But this is not to say that the dust storms brought nothing but disaster to the Southern Plains. Had the storms not rolled across the Plains during the 1930s, the work of the Soil Conservation Service would have been of much smaller scope. Indeed, Dust Bowl farmers would have considered such an agency unnecessary. Thus, the storms forced the farmers to contend with the problems of soil conservation. Although blowing dust occasionally plagues the Southern Plains today when drought returns and reminds careless farmers of the wind erosion hazard, the black blizzards have not recurred. Significantly, Dust Bowl farmers have profited from their knowledge of the past.

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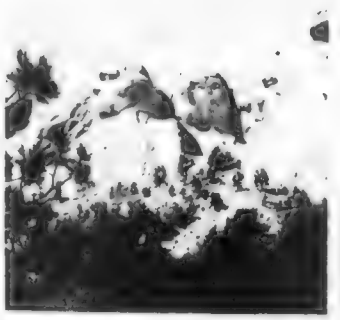

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CUSTER

(Continued from page 9)

imaginable, & have wondered since how I did it. A number of officers came in & stayed the remainder of the night. After waiting & waiting,

June 9, daylight came again, & the water commenced falling, & this time we moved & are now on the crest of a hill where we feel safe, comparatively. What an experience! May I never have to pass through such another! . . .

June 15, 1867. Albert received orders to day to be ready to march Monday morning at daylight as escort for Gen [W. W.] Wright [and his party of Kansas Pacific Railroad surveyors]. What am I to do. I cannot stay here without him.

June 16, 1867. Alberts company was out for inspection. How I hate to see it. . . . Gen Smith came down at 8 O'C and told me to be ready to go in three hours, as all the ladies were going through to Harker with him in ambulances. I had intended to go 8 miles farther west with the engineering party & take the stage there, so as to be with Albert till the last minute, but I must give it up, & say good bye to night. It seems to me I cannot go home, but know it is best. Will I ever be reconciled to these separations? Will I ever be able to part from Albert more easily, or must I all my life endure this agony? I must go, there is no other way. A number have called to say good bye, but I could not bear to devote one moment to them. I wanted to be alone with my darling Albert.

June 17, 1867. We left last night at 12 O'C. Mrs. Gen Custer, Mrs Gen Gibbs, Mrs Wallingford, Miss Darrough, & myself & Gen Smith and Col Weir with our escort of 20 mounted men. And now I feel that it was better, that it was easier for *me* to leave Albert than it would have been for me to have waited & seen him go. I am glad the parting is over. Oh! how sad they are! . . .

And so Albert and Jennie parted, she to return to Cleveland, he to escort the surveyors westward. At Fort Wallace on June 26, 1867, Albert and his troop engaged in a desperate battle with Cheyenne warriors in which he nearly lost his life. He told Jennie of it in a letter dated June 29:

. . . Upon my arrival here I found the small garrison under some apprehension of a renewed attack from the Indians, and it was not deemed prudent to be even a few hundred yards from the fort or our own encampment, which was only a short distance from here, without arms, lest the Indians should suddenly make a dash, and we be found like the foolish virgins! . . .

Well, on the morning of Wednesday, June 26, just as I was about starting to breakfast, I saw a commotion at the Post, men running to and fro, and emerging from their quarters and tents with arms, and at once mistrusting the presence of Indians, I ordered the men to seize their arms, and run out and bring in the horses (which were lariatted near where they could get a little grass), and in the meantime I learned that the Indians were approaching in considerable force, and that a large party were already running off the mules and stage horses from the Ponds-creek Stage station. In less than a minute my horses were coming in, and I at once ordered them to be saddled, and the command formed for action, and mounting my own horse, which had been quickly saddled (the sorrel—the vicious one you remember!) and accompanied by [Edward] Botzer, one of my Trumpeters, I rode out to the North West, to the high ground to reconnoitre, directing Serg't [Francis S.] Gordon to form the command, mount, and follow.

I had not ridden more than half a mile, and completed some hasty observations (discovering small parties of Indians on the ridges, all round the horizon to the west, and north, and a cloud of dust arising from the direction of the Stage Station), when I saw my company approaching, at a gallop, and also a small party of cavalry coming out from the Post to join me. As my troop came up, I deployed the 1st Platoon, under Serg't Gordon, my 1st Sergeant, as Skirmishers, ordering him to proceed at a steady gallop, keeping the horses well in hand, towards the North-West, the apparent centre of the enemy's line, and to direct his movements towards a group of Indians among whom was one mounted on a white horse, and upon approaching sufficiently near, to charge as foragers, cautioning the men to swing to the left in the charge, and endeavor to head off a force which I now saw attempting to escape from the station. I directed the detachment of Company I [the cavalry from the post of Fort Wallace] to cooperate with the skirmishers, and the 2nd Platoon (under Serg't [Josiah] Haines, my Quartermaster Sergeant) to follow in reserve, at 200 paces in rear of the Skirmishers; just as I had completed my formation, and was moving forward in fine style —(the whole formation being done while going forward at a gallop,) Serg't Gordon was thrown from his horse, and considerably bruised, the horse having stepped into a prairie-dog hole, and he was left behind, attempting to follow on foot, until the horse could be caught,—the horse however (a superb animal, one of the finest on the plains) made directly for the Indians, and fearing that he would fall into the hands of the enemy, I started in pursuit, and after repeated efforts, succeeded in catching the bridle, and bringing him to a stand, and sending him back to the Sergeant.

In the meantime, seeing that the Indians from the Station were likely to get past my Skirmish line, before it could reach them, I sent Botzer to Sergeant Haines, with directions for the 2nd Platoon to bear more to the right, and with a few men who were somewhat dispersed, I struck myself toward the center—midway between the skirmish line and the reserve, which had now come up abreast of it. It was just at this juncture, and as the skirmish line were becoming engaged with the Indians, that I sorely missed the absence of Sergeant Gordon, who had not yet come up—(he being far in the rear by the time his horse was caught,) for most unfortunately Serg't Hamlin, of Co.

Officers of the Seventh Cavalry at Fort Dodge, Kansas, were photographed in October 1868, just before the Washita campaign in which Albert Barnitz was severely wounded. Barnitz is seated fourth from left, Custer ninth from left.

"I," was the senior non-commissioned officer with the line —the skirmishers—and no sooner had the Indians found themselves too closely pressed, than being reinforced by another party from behind a ridge, and as their only remaining course, they turned suddenly upon my line, and came literally *sailing* in, uttering their peculiar *Hi!—Hi!—Hi!* and terminating it with the war-whoop—their ponies, gaily decked with feathers and scalp-locks, tossing their proud little heads high in the air, and looking wildly from side to side, as their riders poured in a rapid fire from their repeating arms, or sending their keen arrows with fearful accuracy and force.

I had no sooner seen the turn that affairs were taking, than dreading lest the skirmish line should turn in flight, and thus be at the mercy of their savage pursuers, than I shouted to the men who were with me to hasten to the support of the skirmish line, and signalling to Sergeant Haines, who (through his constitutional stupidity!) was bearing too much to the right—(though warmly engaged, and fighting with great gallantry) to do the same, I dashed with all speed towards the skirmish line, but before I could reach it, the men began to waver, and urged by Sergeant Hamlin to retreat, (who himself made off at all speed followed by a few of his men,) the men began to turn about, and fall back in confusion, nor could I reach them in time to prevent so direful a result, although by signalling them to turn about and face the enemy, I succeeded in inducing some of the most intrepid ones to again confront the enemy, and afford another moments precious time for the reserve platoon (now in entire confusion however) to move towards a concentration with us,—but it was only by singling out individuals, one or two men here and there from among the confused mass of retreating men, and inducing each to turn and fire one or two shots, or beat back the diabolical fiends with the sabre, that I was at length enabled to check the pursuit long enough to measurably concentrate my men. Sergeant Gordon now fortunately reached us, and with his assistance, though not until after a good deal of desultory fighting, I was enabled to effectively check our pursuers, and drive them back beyond the hills.

I now placed Serg't Hamlin in arrest, and ordered him to the post, hastily reformed my command, and dismounting a portion of the men, determined to hold the ground at all hazards, until an ambulance, for which I at once sent, could come from the post, and remove the dead and wounded. Going meanwhile to the summit of a ridge, I took a deliberate look at the fiends, who were drawn up in fine order, upon the summit of another ridge beyond, busily engaged in reloading their arms, and preparing, as I supposed, to renew the fight. With my glass I was able to distinguish their hideous countenances, and the barbaric magnificence of their array, as they sat with their plumed lances, their bows, and shields, and their gleaming weapons,

only awaiting apparently for the signal of their chief to make another descent! But their leading chief, "Roman Nose" had already (as we believe) been killed in the fight [wrongly, it turned out; Roman Nose was not there], and the "Dog Soldiers" (as the Cheyennes style themselves) had paid dearly in the encounter, and so they were not eager to renew the onset.

I now returned to my command, advanced a dismounted skirmish line to the north and west, to cover and protect the horses, and waited patiently for the arrival of an ambulance, and removal of the wounded, and all the dead whose bodies could then be found, when I again moved forward, with a party of my men dismounted to the point where I had last seen the enemy, and a mile beyond, but not the head of even a solitary Indian was anywhere visible above the ridges, and not a pony track was visible on the hard dry ground of the hot prairie, and so I at length returned to the Post, and made arrangements for the burial of the dead, visited the wounded in the hospital, and put things in proper shape for a repulse of the Indians, should they return in force, and make an attempt to capture the post.

The dead were buried with martial honors, all my own company, Genl. Wright and others of the surveying party, the troops of the garrison, myself and all the officers being in the procession. Parties of laborers, and occasional details of soldiers have been working at intervals ever since, digging rifle pits, and we now have things in a very fair shape for defense, should the Indians make their appearance. I cannot say that I deem such an event probable, and yet it is well for one always to be on the safe side. [Pvt. John G.] Hummell was wounded severely—a bullet wound through the thigh, and a lance thrust in the side. But the Surgeon thinks he will recover. Sergeant [Frederick] Wyllyams—the one who fixed the tin protection to our stove pipe,—and who was such a gentlemanly soldier, was killed. The Indians stripped, scalped, and horribly mutilated his body. I dare not tell you how fearfully! He had fought bravely, but had incautiously become separated from the command, and was surrounded by overwhelming numbers. The Indians stripped, or partially stripped all the dead whose bodies fell within their reach. They did this almost instantly. When [Charles] Clarke, the chief Bugler was killed and fell from his horse (while following me from the centre across to the skirmish line—a very hot ride, by the way, for us all!) a powerful Indian was seen to reach down, as he rode at full speed, seize the body with one hand, and jerk it across his pony, strip off the clothes in an instant, dash out the brains with a tomahawk, and hasten on for another victim!—But I would only sicken you with additional details of the fight.

My own scalp seems to have been in considerable request—although not by any means ornamental as a trophy. Corporal [Prentice G.] Harris says he saw an Indian, who appeared to be a chief, swing a pole which he carried, with a bunch of feathers tied to a string, on the end, rapidly around his head five or six times, and then point it at me, when instantly half a dozen Indians started for me, each firing a number of shots, but I was not touched. One Indian dashed towards me, as I rode from the centre to the left, and fired several shots at me over his pony's head, and then when opposite me turned, and rode parallel with me, on my right side, lying lengthwise on his pony, and firing from under his pony's neck, his left arm being thrown over the pony's neck, and grasping his rifle! The shots came *very* close! But I was just then too much concerned for the fate of my command to pay much heed to his firing. I only pointed my revolver at him, a few times, as if I was about to fire, and thus disconcerted him a little, I suppose; but I was reserving my shots for a more favorable opportunity, and *Oh! Darling!* had I not been successful in checking the tide of adversity, and driving back our pursuers, your eyes would have been tearful when tidings from this far land had reached you, apprising you of the dread result!—for it would have been scarcely possible for any one to have reached the Post—the distance being so great, and the Indian ponies so fleet! The men would have fallen one by one, and possibly no one would have escaped to tell the tale!

But *dear* Jennie, do not be fearful on my account hereafter, more than formerly, will you? I will always do my duty, of course, faithfully, and fearlessly, and leave the result with the All-Wise Giver of Life; and should it be my fortune to fall in some future engagement, console yourself with the reflection that I am not dead, but only transferred to a higher and nobler sphere of existence, where I will await your coming, with tender and fond solicitude, as the one dear being without whom I would not choose to live!

I do not forget our tender parting, Jennie,—nor that your eyes were *so* tearful, and that you would not be consoled! You will not doubt that your going away was like the going away of all happiness from my life—and yet I could not wish you remain Jennie! No, it would have been cruel to desire you to remain, even for a day after an opportunity, however wretched, presented itself for your safe return to the serener, and more salubrious atmosphere of the Lake—and *Home!* I fear that you will think me sad—unusually sad perhaps,—and yet I am not. I have passed through such trying vicissitudes of life that I am not now rendered quite despondent by adversity, and scarcely elated in seasons of joy. I dream of you very often—almost nightly I may say, and so long to be with you *always!*—but this *cannot* be, and so I must ever be reconciled to wait!

Albert Barnitz's active military career ended abruptly. At the Battle of the Washita, November 27, 1868, he was shot at close range by a Cheyenne warrior with a Lancaster rifle recently received as an issue item from the government. The bullet very nearly killed Barnitz and led to his disability retirement in 1870. When he died in 1912 an autopsy disclosed that a growth had formed around a fragment of his army overcoat driven into his body by the Lancaster rifle ball forty-four years earlier. Albert was buried in Arlington National Cemetery, where Jennie joined him upon her death in 1926.

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GRAND CANYON

(Continued from page 38)

MEANWHILE, BACK AT KANAB, Clem Powell's troubles still continued, vindicating Beaman. Boatman Jack Hillers, who had become Clem's assistant on February 19, related in his diary:

"[Feb.] 20. This morning I was installed as assistant photographer. Clem tried to take some pictures but failed, bath being out of order—fixed it—while manipulating he upset it—so much for the first day.

"[Feb.] 22. Put up the dark tent—Clem put the bath in it open, started to a spring for some water about a quarter of a mile from camp. On our return, lo, our tent had blown over and the bath spilled again. Tried another which he upset a third time."

After managing to make some successful exposures during the ensuing days, Clem and Hillers on March 3 headed down Kanab Canyon, where they obtained some views but none closer to the Colorado River than the head of running water two miles above Fern Springs Shower Bath. Shortly after this venture, Cousin Clem's tour of duty as expedition photographer came to an end.

Although Major Powell had assigned Clem to act as photographer upon Beaman's departure from the survey party, the Major had no illusions about his cousin's ability and hired a professional photographer in Salt Lake City in February. The new man, who arrived at Kanab on March 19, was James Fennemore of the Savage and Ottinger Studio in Salt Lake City. Born in London, Fennemore died in 1941 at the age of ninety-one, the last survivor of the Powell survey. Despite this achievement he was forced to leave Powell (because of ill health) after only four months of service. During his brief tenure, Fennemore's principal contributions were some excellent views of the Grand Canyon, taken near the foot of Toroweap Valley, and some valuable instruction given to his photographic assistant, Jack Hillers.

The day after Fennemore arrived at Kanab, he exposed his first plates at Pipe Springs. The next day, March 21, when an exploration party departed for the Uinkaret Mountains to locate a supply route to the river, Fennemore and Hillers accompanied them. For ten days Fennemore and Hillers took pictures, mostly in the vicinity of Mount Trumbull. When Fennemore left for Kanab on March 30 to obtain food and chemicals, he left Hillers in the field.

Hillers continued to make pictures during Fennemore's absence and nearly secured photographs of the Grand Canyon. Reaching the rim of the canyon late on the afternoon of April 1, Hillers hoped to obtain some pictures the next day, but bad weather prevented his doing so. On April 3 he made two unsuccessful attempts during a storm, and on April 4 the group turned back because of a shortage of provisions.

During a subsequent expedition, however, Fennemore and Hillers did succeed in securing many views of the Grand Canyon. These photographs were taken on April 18, 19, and 20, only two or three days after Beaman had made his first pictures of the canyon. On this occasion, Fennemore and Hillers, following an Indian trail, descended steeply into the canyon from the foot of Toroweap Valley near Vulcan's Throne to what was called Shivwits Crossing near Lava Falls. En route the pair took pictures at intermediate elevations and in the bottom of the canyon to supplement the more numerous views made from the rim. These were the only photographs of the Grand Canyon made by members of the Powell survey until the river party entered the canyon in August.

Fennemore has not been credited properly for these photographs. When they are acknowledged, they are usually attributed erroneously to Hillers. Although Hillers undoubtedly contributed much to the successful results and although it cannot be denied unequivocally that Hillers exposed plates at Toroweap, Fennemore was in charge of photography at this time while Hillers was merely his assistant, an apprentice so to speak. The error is a clerical one, resulting from a system of labeling which omitted the photographer's name on some photographs. When Powell became director of the U.S. Geological Survey in 1881, he appointed Hillers to head the photographic laboratory. Sometime during his tenure, Hillers labeled all of the Powell survey photographs with index numbers prefixed with the name *Hillers*. Consequently, some photographs for which the identity of the photographer was lost, unknown, or unrecorded have become known over the years as Hillers photographs.

According to one authority, William Culp Darrah, about seventy pictures were made by Fennemore during the four months when he worked with the Powell survey. Much of this work has been overlooked, largely because of the better-known photographs Fennemore made of Brigham Young and of John Doyle Lee, the latter portrayed sitting on his own coffin just before his execution for his alleged part in the Mountain Meadows, Utah, massacre of 1857.

Jack Hillers, the best known of the early photographers of the Grand Canyon, was actually its fourth, though often credited as being its first. The possibility that he made some of the pictures taken near the foot of Toroweap Valley when he was Fennemore's assistant does not change the sequence of photographers.

Hillers was the most popular man on the Powell expeditions. Mental alertness, physical strength, willingness to work, and a lively sense of humor, which earned him the nickname "Jolly Jack," all contributed to his admirable character and likable personality. Born in Germany, Hillers was nine years old when he came to the United States in 1852. He served in the Union Army during the Civil War and at several western posts until 1870. He was a teamster in Salt Lake City when Major Powell hired him as a boatman for the second river survey in 1871, and Hillers was to remain with the Powell survey work through the 1870s until he was assigned to a post in the U.S. Geological Survey under Powell's direction. Through his own merit, Hillers became the best known, though not the first,

BOTH PAGES: U.S. GEOLOGICAL SURVEY

Today John K. Hillers, originally hired as a boatman for the Powell Survey, is the most well known of the early Grand Canyon photographers. Hillers probably made this picture of the outlet of Surprise Valley in early September 1872. (Beaman's earlier photograph of the same waterfall is reproduced on page 37.)

photographer in the pioneer investigations of the Grand Canyon.

Frequently called upon to carry equipment for photographer E. O. Beaman, Hillers also became involved indirectly at least in taking and developing photographs. Having watched Beaman at work, Hillers probably was capable of taking and developing photographs by the time the expedition went into winter camp in January 1872, despite the lack of opportunity to demonstate his ability. What skills he acquired under Beaman's humorless supervision qualified him as assistant photographer on the Powell survey for the next several months—first under the titular leadership of Clement Powell and later under the professional direction of James Fennemore. As Fennemore's health deteriorated during an overland expedition in early summer 1872, the actual photography devolved more and more upon Jack. Shortly after arriving at Lees Ferry in mid-July, Fennemore resigned. When the Powell party debarked at Lees Ferry on August 17, 1872, for the last leg of the river survey, Hillers was photographer with Walter Clement Powell as his assistant.

After running Marble Gorge, the party came to the mouth of the Little Colorado River, the head of the Grand Canyon of the Colorado, on August 22. Hillers photographed the Grand Canyon the following day while the rest of the group remained encamped at the mouth of the Little Colorado. From this point to the mouth of Kanab Canyon, where the Powell survey terminated, Hillers continued to make many photographs, the last on September 10. Clem was his assistant all the way to Kanab Canyon and even up it. However, Cousin Clem's ingrained clumsiness still proved to be a liability, as Hillers's journal attests: "Made two pictures, when Clem unfortunately broke the slide in the plate holder."

FIFTH OF THE GRAND CANYON PHOTOGRAPHERS was William W. Bell, who accompanied the Wheeler survey in 1872. Bell photographed the canyon at the mouth of Kanab Creek on October 28 or 29, about six weeks after the Powell party had passed through the area. The fine photographs made by Bell during his brief visits to the Grand Canyon have been ignored almost as completely as have the accounts of his activities in the area. Fortunately, we have this report from Wheeler:

"In photography we have had the assistance of Mr. William Bell, an assistant from Philadelphia, through whose valuable and energetic services have been obtained a series of landscape and stereoscopic negatives, illustrating many geological and other features in Utah and in the Grand Cañon of the Colorado. I would here mention that Mr. Bell has successfully used the dry-plate process with negatives prepared by himself, and is worthy of commendation for his interest and industry in his attempt to perfect this process."

The techniques used by Bell in the Grand Canyon were, indeed, noteworthy, for dry-plate processes were not to be introduced commercially by Kodak until the late 1880s. The approximate dates on which Bell made his remarkable photographs of the Grand Canyon can be determined by identifying the locations where the pictures were made and

correlating these with the party's known campsites, which were recorded meticulously by the Wheeler survey. Bell himself camped with the surveyors most of the time, although it is possible that he did not do so on a few occasions. On October 26, for example, a side party from the survey camped at Hanging Rock in Kanab Canyon and descended from there to the Colorado River, where it encamped on October 26. En route Bell, who was with this group, photographed some of the same subjects which had been recorded earlier in the same year by Beaman and Hillers, including scenes of Fern Springs Shower Bath. Bell also made at least two pictures of the Grand Canyon at the mouth of Kanab Wash. This Wheeler group apparently traversed the Colorado River for only a short distance, since they stopped at Fern Springs on October 29 and then retraced their route to Kanab, Utah.

Next, the Wheeler expedition surveyed a line to the mouth of the Paria River near Lees Ferry, where Bell took several pictures of Marble Gorge. Returning on a line to the west, Bell and the surveyors stopped at the foot of Toroweap Valley on approximately November 18-20, when Bell made several of his best negatives. By November 20 the group had moved north of the Grand Canyon, thus fixing the latest dates for these views.

During this expedition the Wheeler party was in contact with Powell's on the north side of the Grand Canyon. Clem Powell's journal records two encounters between photographers from the two surveys. On November 21 near Kanab he recorded: "Bell of Philadelphia and his assistant photographer of Lieut. Wheeler's party made us a short visit; have just returned from the Pahria. Showed him our negatives. He pronounced them fine; invited us up to his camp tomorrow to see his negatives." Of this occasion Clem reported: "Bell and Thompson and others treated us handsomely. Bell showed us how to develop dry plates; do not like the process as well as the wet. Show us his views; there is too much bare ground to make them first class. Admired his dark tent and the conveniences he had for taking pictures. He [Bell] is heartily sick of the trip."

"A prophet is not without honour, save in his own country," as Cousin Clem's remarks about Bell demonstrate.

The first photographs of the Grand Canyon certainly were not of consistent quality, and the number which survived damage or destruction is disappointingly small. Yet the fact that we have any at all is remarkable when one considers the difficulties of the techniques then in use, the fragility of the negatives, and the ruggedness of the terrain where the equipment was transported. The photographic record obtained was not the work of any one individual but of five, each struggling to the extent of his own ability and fortitude against great odds. That we today may favor one more than another in memory is merely a matter of a good press rather than of a correct historical record.

William W. Bell, the fifth man to photograph the Grand Canyon, made this fine view of the mouth of Kanab Canyon in the fall of 1872. While the other pioneer Grand Canyon photographers used wet-plate negatives, Bell experimented with the dry-plate process, an innovation not introduced commercially until the late 1880s.

George C. Simmons *is a geologist with the U.S. Geological Survey currently working in Saudi Arabia. He is a member of the Powell Society, Ltd., and has spent several years investigating the Grand Canyon and its history.* **Virginia McConnell Simmons,** *a former editor of publications for the State Historical Society of Colorado, has authored a number of books and articles on the American West.*

Membership in the Western History Association is open to anyone interested in the history and culture of the American West. Inquiries should be addressed to the Secretary, William D. Rowley, Department of History, University of Nevada, Reno, Nevada 89507. Membership is on a calendar-year basis and includes THE AMERICAN WEST and WESTERN HISTORICAL QUARTERLY. Annual dues are: Regular Member $16.00; Sustaining Member $30.00; Student Member & Emeritus Member $10.00 (includes only the WESTERN HISTORICAL QUARTERLY and Annual Conference material); Sponsoring Member $100.00 (Institution); Life Member $300.00, paid in a twelve-month period. Individuals or institutions not wishing to become members may subscribe directly to either THE AMERICAN WEST or the WESTERN HISTORICAL QUARTERLY at regular subscription rates.

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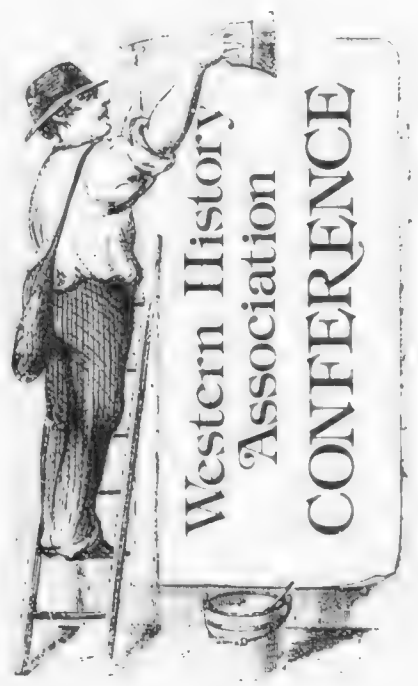

A VARIETY of special events will highlight this year's Western History Association Conference at the Portland Hilton, Portland, Oregon, October 12–15. Featured speaker at the annual banquet will be Fawn M. Brodie, professor of history at UCLA, who will discuss "Richard Nixon: The Child in the Man." Professor Brodie, who has written biographies of Joseph Smith and Thomas Jefferson, is known for her studies of men in the presidency.

Another special event will be a showing of the 1930s documentary film "The Columbia," with background songs about the Columbia River country composed and sung by Woody Guthrie. Also on the agenda is a cocktail party hosted by the Oregon Historical Society and the Portland Art Museum, a tour of Fort Vancouver National Historic Site, and dinner at Timberline Lodge on Mount Hood. For full details about the conference, write William D. Rowley, Department of History, University of Nevada, Reno, Nevada 89507.

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